

**City of Tacoma  
Municipal Stormwater NPDES Permit**

**2005 Annual Report**

**This report provides an update of the stormwater program activities conducted by the City of Tacoma during 2005.**

**Submitted pursuant to Special Condition S10 of the National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for discharges from municipal separate sewers for the South Puget Sound Water Quality Management Area and the portion of the Kitsap Water Quality Management Area located in Pierce County**

**Municipal Stormwater NPDES Permit Number WASM11001**



**Submitted by:  
Tacoma Public Works  
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### Water

*Water: majestic,  
Live-giving, creation's jewel.  
World's greatest treasure.*

## **2005 Annual Stormwater Report**

### **INTRODUCTION**

We are pleased to present an update of the stormwater program activities conducted by Surface Water Management in 2005. The work we do in stormwater and surface water management supports one of the top priorities of the City of Tacoma's Strategic Plan: *to provide a safe, healthy and livable community in which the quality of our environment and abundant natural resources are protected.*

This report is being submitted by the City of Tacoma pursuant to Special Condition S10 of the National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for discharges from Tacoma's municipal separate storm sewer system. This very detailed annual report covers the reporting period January 1, 2005, through December 31, 2005 and is written to comply with the requirements of our NPDES permit. For an easy to read summary of this work, please refer to the 2005 Annual Report Summary found in Appendix A.

Tacoma received its NPDES Municipal Discharge Permit from the Washington State Department of Ecology (Ecology) in 1995. In 1999, the City's Stormwater Management Program (SWMP) was approved by Ecology as meeting the requirements of that permit. The permit was expected to expire in 2000, but was administratively extended by Ecology and has not yet been reissued.

The City's Surface Water Management Program includes goals to protect and improve the quality of our surface water by reducing negative impacts from our urban lifestyle.

These goals include the following:

- Protect the health, safety and welfare of the public.
- Manage runoff from developed and newly developing properties.
- Mitigate the impacts of increased runoff due to urbanization.
- Manage stormwater and groundwater to minimize contact with pollutants.
- Manage stormwater to minimize flooding and erosion.
- Correct or mitigate existing water quality problems.
- Restore and maintain the chemical, physical and biological integrity of natural systems under the City's jurisdiction to protect beneficial uses.

Comments or questions regarding this annual report can be directed to Christy L. Strand, P.E., Tacoma Public Works Department, Environmental Services/Science and Engineering Division at 253-502-2105 or [cstrand@cityoftacoma.org](mailto:cstrand@cityoftacoma.org).

## **1. Status of Implementing the Components of the City's Surface Water Management Program**

This report describes the implementation of the City of Tacoma's Surface Water Management Program (SWMP) during 2005. The following reports, documents and activities were completed in 2005 as per the SWMP schedule.

- The 2004 Annual Report was submitted to Ecology.
- The third year of the City's new "Make a Splash" Stormwater Grant Program promoting community environmental education, protection and restoration projects was implemented and is ongoing in 2006.
- The source control staff was awarded the prestigious "Bay Heroes Award" by the environmental group Citizens for a Healthy Bay (CHB).
- A variety of ongoing monitoring activities were done including activities related to shorelines, wetlands and creeks.
- Surface water staff led the third year of a City-wide effort to address the West Nile Virus.
- The City continued to implement the Regional Roads Maintenance Program for the Endangered Species Act.
- In-water cleanup work continued on the Thea Foss and Wheeler-Osgood Waterways Superfund Site.
- Monitoring and source control efforts in the Thea Foss and Wheeler-Osgood Waterways were ongoing.
- The plan review staff continued to work on several very large projects, including the addition of HOV lanes to SR 16 and I-5, the Burlington Northern Santa Fe Railroad (BNSF) realignment of their mainline tracks in the vicinity of East D Street, the revisions to the BNSF/Dock Street yard, and the extension of Sound Transit's commuter rail from Freighthouse Square to the City of Lakewood.
- The plan review staff processed over 600 commercial plans, land use tasks, private work orders and street vacations.
- Ten educational signs addressing water quality concerns were installed at the City's detention ponds.
- Mason and Crystal Springs Creeks were evaluated for possible daylighting projects.
- Several major presentations were given by staff. These included presentations at the StormCon 2005 National Conference, the International Erosion Control

Association Conference and three presentations at the Pacific Northwest Clean Water Association Conference. Other presentations were made to a Field Inspector Conference, the Puyallup River Watershed Council and to Tacoma's Resource Conservation Stewards.

### **S7B1 Stormwater Management Program Planning Process**

Surface Water Utility staff worked with managers and staff from the Public Works Department, Community Relations and Tacoma Public Utilities to compile the information needed for this report. Public Works staff from the Science and Engineering, Wastewater Operations, Maintenance, Streets and Grounds, Construction, Solid Waste Utility and Building and Land Use Services Divisions assisted. Tacoma Public Utilities staff from Tacoma Power and Tacoma Water also provided information used in this report. Participation by elected officials and the public took place in 1995, 1996, 1999, 2000, 2001, 2002, 2003, 2004 and 2005.

Planning efforts also included the evaluation of the need for additional staff in the Surface Water Program, and it is anticipated that new staff will be added in 2006.

Tacoma's Surface Water Utility, along with the Solid Waste Utility and the Wastewater Utility, has a customer advisory panel. This panel is called the Environmental Services Customer Advisory Panel (ESCAP) and has been providing citizen oversight of the Surface Water and the other Public Works utilities for approximately ten years, since their establishment by the City Council. The panel was not active in 2005.

### **S7B2 Water Quality Problems, Needs and Priorities**

#### **ANALYSIS OF NEEDS AND PRIORITIES**

The City's analysis of needs and priorities was included in the SWMP that Ecology approved. The SWMP includes a prioritized list of all of the City's unmet stormwater needs. The bulleted items on the first page of this report highlight many of the unmet needs that were addressed in 2005.

### **S7B3 Legal Authority**

#### **ADOPTION AND ENFORCEMENT OF ORDINANCE CONTAINING STANDARDS EQUIVALENT TO THE MINIMUM REQUIREMENTS OF ECOLOGY'S STORMWATER MANAGEMENT MANUAL**

The City's ordinance, Chapter 12.08 of the City Code includes the minimum requirements from the Surface Water Management Manual (SWMM), the authority to inspect private businesses and the ability to require maintenance of private stormwater best management practices (BMPs). It also authorizes the Public Works director to implement the SWMM. A draft Enforcement Response Plan has also been prepared and is being reviewed by management.

#### **ADOPTION AND ENFORCEMENT OF ORDINANCE PROHIBITING POLLUTION DISCHARGES TO THE CITY'S MUNICIPAL STORMWATER SYSTEM**

The City's previous ordinances have prohibited the discharge of pollutants to the City's stormwater system for many years. The current ordinance does also.

### **S7B4 Monitoring**

Please refer to Section S12 Thea Foss Waterway Basin Program for additional information on monitoring activities in the Foss Basin.

On September 9, 2003, the City received and City Council accepted a \$500,000 grant from the Federal Highway Administration, 2003 Transportation Community and System Preservation (TCSP) Pilot Program for the Thea Foss Waterway Stormwater Study. The

application indicated that the City could use the grant to continue and expand the study and evaluation of the effectiveness of various treatment methodologies for stormwater from roads and highways using the Ship Canal Test facility in Seattle. Approximately half of the grant will be spent on this project. The City has entered into an Interagency Memorandum of Agreement (IMOA) with the Washington State Department of Transportation (WSDOT) for participation in a study of structural stormwater controls. Seattle Public Utilities is also participating in the project. In addition to the Ship Canal Study, the City is currently looking for additional study sites in Tacoma to apply the remaining grant amount.

Two stormwater treatment vault technologies are being tested including the StormFilter, and AquaShield – AquaFilter. The project will include monitoring 15 storms for each technology. A report on each technology will evaluate the treatment performance of each treatment system. The City will continue to work closely with WSDOT, Seattle Public Utilities, Taylor Associates, and the vendors. Testing on the StormFilter was completed in December 2005. The report will be completed in 2006. Testing on the AquaShield – AquaFilter will begin in 2006.

Following the completion of each technology's testing period, the City will evaluate the technology's effectiveness and applicability and reasonableness for use of this technology within the Thea Foss Watershed. Reasonable shall take into consideration effectiveness, maintenance requirements, flood control and cost in comparison to the effectiveness achieved to date in the Thea Foss Watershed as a result of the current source control program.

The City of Tacoma provides \$25,000 on a yearly basis to help sponsor the Pierce Conservation District Stream Team. The Stream Team has many volunteers that do important, but limited, stream monitoring in several streams including Swan Creek, Puget Creek, Mason Creek, Garfield Creek, Wapato Creek and Hylebos Creek. They monitor for pH, temperature, and other basic parameters. Information about these monitoring activities is included in Appendix B in a report titled "Urban Creek and Lake Assessment Report – 2005 Update on Monitoring Results for Tacoma's Larger Creeks and Lakes: Swan, Hylebos, Puget, Mason, Wapato and Garfield Creeks, and Wapato and Snake Lakes March 31, 2006." Wapato and Snake Lakes were added to this monitoring program in 2005. It is planned to add China Lake to the program in 2006. The GPS crew did limited monitoring of the T-Street Gulch. The small creek in the T-Street Gulch was monitored six times in 2005 by staff from the Surface Water Management Program. This creek flows through the eastern portion of the City of Tacoma and also drains a portion of unincorporated Pierce County. The dissolved oxygen and temperature levels all met the Class A water quality standards. Only one of the six pH samples met the Class A water quality standards and the other readings were lower than the standard. Turbidity measurements were not taken. The water appeared clean each time, the stream bed was covered with cobbles and odors were not noted. The monitoring results can be found at the end of Appendix B.



Stream Team taking measurements from Swan Creek.

The City contracted with a local environmental group, CHB, for environmental hotline services. CHB's hotline number (253-383-2429) was operational throughout 2005. One hundred calls were received in 2005. As in the past, the largest category of calls was related to oil and/or vehicle fluids. Commencement Bay and the Thea Foss were listed most often as the receiving waters for these calls. Most of the calls received were from citizens. The City responded to almost 60 of the calls and Ecology responded to over 20 of them. For more information, please refer to Appendix C for the 2005 Annual Report of Tacoma's Environmental Pollution Hotline which was developed by CHB.

CHB also sponsors a Baykeeper Program (Commencement Baykeeper). The person hired as the baykeeper patrols the City's many miles of shoreline in a boat. The City provided \$15,000 in financial support for this program in 2005, and coordinates its efforts with those of this environmental group. The following information summarizes CHB's accomplishments in various monitoring related programs designed to help protect water quality in Commencement Bay.

**Table # 1 Citizens for a Healthy Bay Summary**

<b>Task</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
<b>Baykeeper Activities</b>				
On the water patrols	48	29	75	70
Shoreline patrols				15
Patrol hours	69	68	203	210
Kayak patrols	24	39	11	4
Walking patrols	60	64	5	*
Training events	4	6	6	8
<b>Other Activities</b>				
Hotline reports	51	39	52	100
Clean boating kits distributed				400
# involved in boater education	0	200	40	50
# of citizen keeper volunteers	0	92	22	20
NPDES industrial permit reviews	4	3	9	7
Industrial site visits				6
New EnviroStar Marinas	1	0	1	3

\* included with shoreline patrols

During 2005, approximately 70 on-the-water patrols were conducted by the Commencement Baykeeper, CHB staff, or citizen volunteers. In addition, at least 15 shoreline patrols were conducted, some of which (approximately five) were in cooperation with the City of Tacoma's source control staff. These cooperative patrols included night-time storm drain inspections, shoreline outfall inspections, and other



cooperative investigations. This brought the total number of patrols in 2005 to approximately 85. For more information, please refer to Appendix D for the Commencement Baykeeper Report 2005 Summary Annual Report which was developed by CHB.

The Tacoma Police Department added a new police boat and also uses jet skis as part of a Homeland Security Program to inspect and help protect Commencement Bay. Staff from source control and from Ecology provided training to the police staff about what to look for with respect to illicit discharges when they're out on the water. The police department monitored and assisted in approximately 10 oil/fuel spills. They also implemented many other activities not directly related to water quality.

A five-year monitoring period (beginning upon completion) is required for all Natural Resource Damage Assessment (NRDA) restoration sites per the City's NRDA Consent Decree. Four of the City's five NRDA restoration sites, Middle Waterway, Swan Creek, Olympic View, and Tahoma Salt Marsh, have been completed and continue to be monitored as required. Sediment and vegetation are the main parameters monitored at each site. The remaining site, Hylebos Marsh, has yet to be built and is currently the topic of an alternative site proposal. The City completed the last year of monitoring for the Middle Waterway site in 2005. The GPS crew mapped the Olympic View sample sites.

The Building and Land Use Services Division of Public Works continued to employ a consulting firm in 2005 to perform wetland inspection and permit analysis in order to allow the permanent senior environmental specialist the time to work on the rewrite of the Critical Areas Preservation Ordinance. Phase I (interim) and Phase II (new) changes of the Critical Areas Preservation Ordinance were completed and Phase III (shoreline) is now underway along with the updates to the Shoreline Master Program. The Building and Land Use Services Division hired another permanent senior environmental specialist to assist with increasing workload brought on by the changes to the ordinance. The consultant contract was also retained throughout 2005. The wetland totals are the combined effort of both the consultants and the permanent staff people.

**Table # 2 Wetland Program Activities**

<b>Task</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Wetland permits	12	36	42
Wetland inspections	82	110	257
Wetland enforcement actions	9	14	10

Wetland enforcement actions were counted for those actions that were a complaint, or violation of conditional approvals. Although all monitoring, maintenance and follow-up conditions could be considered a type of enforcement, these enforcement actions do not include permit condition enforcement such as "notice on title" documentation, storm plan review, site visits to verify installation and monitoring plans, etc. However, failure to comply with conditions is included in the violations noted above. Site visits for these enforcement actions would be reflected in the wetland inspection count.

A University of Washington student conducted "A Study of Intertidal-Wetland Restoration in Puget Sound" and used the City's Middle Waterway restoration site as a subject in the study. The focus of the study is to create a database that presents the evaluation of restoration practices as related to restoration success in different environmental gradients.

There is an official weather station at the Central Wastewater Treatment Plant and four rain gauges located throughout the City. Rainfall data has been recorded since 1953. The rain gauge information is recorded and used as needed. The City contracts with a weather service and receives weather reports twice a day. This information provides an early warning of heavy rains and potential flooding. Maintenance crews are dispatched to proactively check and maintain trouble spots prior to anticipated heavy rains, to ensure the proper operation of the system.

#### **STORM SEWER MONITORING IN COMMERCIAL/INDUSTRIAL AREAS**

Please refer to Section S12 Thea Foss Waterway Basin Program for additional information about monitoring in commercial and industrial areas.

#### **S7B5 FISCAL ANALYSIS**

During the reporting period of January 1, 2005 through December 31, 2005, the stormwater utility spent \$49.7 million. The expenditure categories are as follows:

#### **OPERATIONS:**

##### **Transmission**

Personal Services	\$1,186,961.86
Supplies & Other Services and Charges	\$752,438.12
Miscellaneous Capital Outlay	\$0.00
<b>Total</b>	<b>\$1,939,399.98</b>

##### **Pumping**

Personal Services	\$95,473.67
Supplies & Other Services and Charges	\$123,364.87
Miscellaneous Capital Outlay	\$0.00
<b>Total</b>	<b>\$218,838.54</b>

##### **Holding Basins**

Personal Services	\$88,023.04
Supplies & Other Services and Charges	\$377,913.58
Miscellaneous Capital Outlay	\$0.00
<b>Total</b>	<b>\$465,936.62</b>

##### **Engineering**

Personal Services	\$539,492.49
Supplies & Other Services and Charges	\$172,641.83
Miscellaneous Capital Outlay	\$20,403.27
<b>Total</b>	<b>\$732,537.59</b>

##### **Source Control**

Personal Services	\$1,704,343.31
Supplies & Other Services and Charges	\$2,606,694.69
Miscellaneous Capital Outlay	\$0.00
<b>Total</b>	<b>\$4,311,038.00</b>

##### **Laboratory**

Personal Services	\$220,932.81
Supplies & Other Services and Charges	\$82,748.80

Miscellaneous Capital Outlay	\$0.00
<b>Total</b>	<b>\$303,681.61</b>

## **MISCELLANEOUS**

### **General Services**

Personal Services	\$587,378.45
Supplies & Other Services and Charges	\$4,682,932.25
Miscellaneous Capital Outlay	\$0.00
Depreciation	\$1,821,786.30
<b>Total</b>	<b>\$7,092,097.00</b>

### **Debt Service**

Principal and Interest	\$5,037,242.00
Other	\$0.00
<b>Total</b>	<b>\$5,037,242.00</b>

### **Other Department Divisions not included above:**

Miscellaneous

unknown at this time

### **Capital Projects:**

Foss Waterway Cleanup	\$26,076,166.00
NRDA	\$305,912.14
Miscellaneous	\$3,256,086.17
<b>Total</b>	<b>\$29,638,164.31</b>

**Grand Total** **\$49,738,935.65**

The surface water rates pay to operate and maintain public stormwater pipes, detention ponds, pump stations and more than 18,000 catch basins. In addition, the City uses these funds to improve water quality and to comply with stormwater permit regulations and ongoing Thea Foss Waterway Superfund cleanup.

The expected revenue from rates in 2006 is \$18.4 million. The anticipated expenditures for the year 2006 will likely be about the same as for the year 2005.

## **S7B6 Data Management**

### **DEVELOPMENT OF LAND COVER INFORMATION MAPS AND DATA**

A first draft of the Stormwater Geographical Information System (GIS) mapping system was completed in the early 1990s. It is constantly being corrected and updated, but it is not fully field checked. The City currently has two full-time staff persons updating and correcting the system using recorded drawings, global positioning system (GPS) points and field inspections. Currently, 63 of the 64 sections of the original system have been completed and the remaining section is scheduled to be completed by the end of March 2006. Three additional projects to enhance the complete system include the GPS catch basin project, the GPS outfall project and the GPS private systems project. The GPS catch basin project was completed in 2005, which included inventorying all catch basins in the City's rights-of-way. The GPS outfall project, which included inventorying all public and private stormwater outfalls, was also completed in 2005 and correlating these outfalls to the existing Tacoma-Pierce County Health Department (TPCHD) outfall

inventory system is scheduled to be completed by the summer of 2006. The GPS private systems project, which will inventory systems outside the City right-of-way, has commenced and approximately five of the 64 sections have been completed. This project is on schedule to be completed by the end of 2007. The work management data and critical information of the stormwater GIS system has been updated in the City's Enterprise Resource Planning (ERP) tool known as SAP, where the data and information will be maintained and updated. The entire City of Tacoma wetlands map was originally completed in 2000 and was last updated in January 2006. A collection of maps contained within the City-wide GIS is available to both internal and external customers via the City's Public Works' GovMe website.

#### **WATER QUALITY COMPLAINT INVESTIGATIONS AND DATABASE DEVELOPMENT AND MAINTENANCE**

A customer request database known as the Spills and Complaints Database was developed and put into place in early 2002. It is used on a regular basis by the surface water source control staff to track complaints, spills, flooding and investigations. A corresponding Business Inspection Database was developed in late 2003 and was put into use in early 2005 to track inspections of businesses within the City limits. The City currently has four full-time surface water and five sanitary source control staff persons. Their first priority is responding to complaints and spills and their second priority is inspecting the more than 5,000 businesses within the City limits, which does not include home businesses. A lot of their time is spent on issues related to the Thea Foss Waterway Superfund Site. The City is currently assessing the need for more surface water source control staff to handle the number of business inspections. Also in correlation with the Spills and Complaints Database, a Claims Database was developed in late 2003 and put into use in early 2005 to track all filed and/or potential surface and wastewater claims. These databases were developed and based on addresses to enable the source control staff to view and research spills, complaints, flooding, investigations, business inspections and claims via an internal website. Currently, revisions are still being made to these databases, to include research for uploading and synchronization with the City's GIS mapping and SAP system.

#### **DESCRIPTION AND LOCATION OF MAJOR STRUCTURAL BMPs AND OTHER STRUCTURAL CONTROLS**

This type of mapping is now available and is regularly updated. The information is available on the City's website under "Map Guide."

The City's GPS crew acquired a new work van in September and had it outfitted with tool storage, smoke generator, safety lights and cone racks. This vehicle has allowed them to work more efficiently. The crew completed several GPS mapping efforts including the creation of the Thea Foss Waterway – Sediment Trap Data Results Maps and maps of water quality devices. They also mapped the drainage from State Road 509, the stormwater system at the Kandle Army Reserve, all Leach Creek relief valves, created pump station service area maps and mapped the facilities at Puget Creek. They also located manholes, catch basins, pipes and drainage sources on various projects using field investigations and smoke testing. They are currently continuing to map all of the private drainage systems in the City as mentioned above.



City mapping private outfalls.

### **MAPPING STORM SEWER OUTFALLS AND TRIBUTARY CONVEYANCES**

This type of mapping has been available for many years and is regularly updated.

Another project completed by the GPS crew included mapping of all City of Tacoma and private stormwater outfalls as mentioned above.

The crew also mapped the Tacoma Dome site and its surrounding stormwater drainage, and created maps for the potential Browns Point and Fife Heights annexation. They also created pipe age analysis maps.

The following equipment and procedures were used in all stormwater-mapping projects. A Trimble GEO XT was used to map point, line, and area features. A Sony Mavica digital camera was used to record photographs of locations, views, and conditions of stormwater assets in the field. A Trimble Pathfinder was used to download data from the GPS unit and convert data into shapefiles. ArcView and ArcGIS are used in the office to edit data and create maps. Edited data is passed on to the City's GIS system.

### **S7B7 Intergovernmental Coordination**

A lot of intergovernmental coordination takes place in the implementation of the stormwater program as outlined below. Coordination specific to the Thea Foss Waterway also takes place. Please refer to Section S12 Thea Foss Waterway Basin Program for additional information about coordination activities with respect to the Thea Foss Waterway.

The City reviewed large projects related to the Blair Waterway located within the Port of Tacoma, for compliance with the City's Surface Water Management Manual with respect to water quality devices. One was for widening of the waterway at the former 11<sup>th</sup> Street bridge crossing and the other was for filling of the wharf north of 11<sup>th</sup> Street. These systems drained through private outfalls and courtesy comments were provided to the Port of Tacoma and Ecology regarding surface water management.

The City continues to work with the Tacoma Housing Authority on the Salishan HOPE VI Project. A World War II vintage housing project is being replaced with 1,270 new dwelling units. The project utilizes bioswales and bioinfiltration swales to provide water quality treatment for runoff from pollution generating impervious surfaces.

We are currently participating with the Pierce Conservation District to develop a wetland mitigation bank in the Flett Wetland. Other parties involved in this effort include the City of Lakewood, the Mountain View Cemetery and Bates Vocational College. Tacoma's involvement includes partial funding with Tacoma's \$5 per parcel Conservation District tax, and support, coordination and technical assistance for the project. The Pierce

Conservation District is the lead agency. Currently conceptual alternatives have been developed and are being evaluated for feasibility.

Draft flood management plan alternatives for reducing flooding in the Leach Creek watershed were discussed with the cities of Fircrest and University Place and the Pierce Conservation District. The Conservation District is pursuing a Flood Management Plan with the assistance of a consulting firm. Tacoma is moving forward with the Nalley Valley force main extension project that will allow for increased effectiveness in the Leach Creek pump station.

The City has an Interagency Memorandum of Agreement (IMOA) with the Washington State Department of Transportation (WSDOT) for participation in a study at the Ship Canal in Seattle of structural stormwater controls. For the City of Tacoma, the overall intent of this IMOA is to work collaboratively to verify the performance of temporary and permanent stormwater treatment technologies, and to evaluate the applicability of these technologies to the conditions in the Thea Foss Waterway. Seattle Public Utilities is also participating in this study. Please refer to Section S7B4 Monitoring for more information on this program.

The City also continues to coordinate with WSDOT on the major improvements being made to State Route 16 (SR-16) and Interstate 5 (I-5) as part of the installation of high occupancy vehicle (HOV) lanes. Improvements to both freeways started in 2005. For SR 16 work within the Leach Creek drainage area, future habitat conservation and wetland mitigation is part of the mitigation package conditioned within the wetland permit requirements. Within the Flett Creek drainage basin, WSDOT is presently determining the mitigation that will be provided to address construction and shading impacts to Snake Lake. This lake is located within the Tacoma Nature Center, a major park and environmental education center, and is part of the Flett Creek drainage area. Extensive coordination continues with the "Tacoma Narrows Constructors", the company building the new Narrows Bridge. A City staff person also served on WSDOT's Advisory Committee for their NPDES Stormwater Permit.

The Tri-County Roads Maintenance Program was developed through the Tri-County ESA process. The program was adopted by the City of Tacoma.

The City of Tacoma is also participating in Ecology's Technical Review Committee (TRC). The TRC evaluates vendor submissions on emerging stormwater treatment technologies. Based on the evaluation, the technologies may be approved by Ecology, through the TRC, for use as part of a stormwater treatment train and/or as stand alone BMPs (Ecology 2002). The results of these efforts will be used to determine whether effective technologies currently exist for reducing concentrations of contaminants of concern in stormwater.

Staff coordinated with the local cities of Olympia and Federal Way and with Austin, Texas and Arlington County, Virginia regarding regional water quality facilities.

The City continued to participate in the Puyallup River Watershed Council, the Hylebos Watershed Action Team and the Chambers-Clover Watershed Council. Members of the three groups consist of various municipalities and representatives from business, tribal and environmental interests as well as interested citizens. The first two groups include membership from King County as well as from Pierce County. The Chambers-Clover Creek watershed is located entirely within Pierce County.

The City continued its partnership with Metro Parks Tacoma in order to promote stormwater pollution prevention messages at the Point Defiance Zoo and Aquarium using interactive murals and aquarium laboratory staff. The City also worked with Metro Parks with respect to the outfall on China Lake and the wash pad at Wapato Park.

The new "Make a Splash" Environmental Services, Surface Water Grant Program concluded its second year in 2005 and a third round of grants was implemented later in 2005. The program was implemented to promote community-based projects that provide environmental education, protection and restoration and has proven to be very successful and popular with the community. Nineteen grants were awarded for a total of \$45,500. The grants were awarded to very diverse community groups, including the Friends of Swan Creek, Blueberry Park Volunteers, First Presbyterian Church School, the Boy Scouts and Girl Scouts, Celebration Park Citizens, My Service Mind and others. The projects are very diverse as well, and are described in more detail in Section S7B8i Stormwater Education. The grant program has and will continue to create many opportunities to partner and coordinate with many different types of groups in Tacoma.

Implementation of the NRDA consent decree during 2005 included coordination between various governmental agencies: The United States Departments of Commerce (National Oceanic and Atmospheric Administration), Interior (Fish and Wildlife Service), and the Environmental Protection Agency, the Washington State Departments of Ecology, Fish and Wildlife, and Natural Resources, the Puyallup Tribe of Indians and the Muckleshoot Indian Tribe. Topics of these meetings included the proposal of a Hylebos Marsh alternative site, monitoring and adaptive management for completed restoration sites, in-kind services, and general coordination of the consent decree requirements.

The City has once again sponsored a Washington Conservation Corps crew for the 2005-2006 program year. The six-person crew's focus is habitat restoration and maintenance. From October through December 2005, the crew planted over 2,000 plants, completed maintenance at two NRDA sites, installed 10 stormwater pond public education signs, installed large woody debris, trail maintenance at Swan Creek with the Friends of Swan Creek Watershed group, plantings with the Friends of the Hylebos, and installed goose exclusion devices.

The City also coordinated with the King Conservation District. The district donated 300 plants that were planted at two of the Thea Foss mitigation project sites.

The City's participation in the NW Natural Yard Days promotion involved coordination with City of Seattle, King County, and Pierce County.

The City worked with the Pierce Conservation District and the Tacoma Urban League to perform maintenance at the City's NRDA restoration sites.

The plan review staff continued to work on several other very large projects which take a great deal of ongoing coordination. These projects include the Burlington Northern Santa Fe Railroad (BNSF) mainline track realignment adjacent to Thea Foss Waterway, the upgrade of the BNSF Dock Street Rail Yard and the extension of the Sound Transit commuter rail from Freighthouse Square to the City of Lakewood.

Source control staff attends regional inspector meetings hosted by various municipalities.

City staff attended a tour of Sea-Tac Airport's third runway with Ecology inspectors and the Sea-Tac environmental manager.

During the City's preparation for the possible West Nile Virus arrival in Washington State, coordination took place with the Tacoma-Pierce County Health Department, the Washington State Department of Health and other municipal surface water management staff. Training was also provided.

Source control staff coordinated with the University of Washington – Tacoma, Environmental Science Program to monitor water quality parameters and take environmental samples in Commencement Bay using the City's boat.

The City continued its coordination with the other Phase I municipalities to review and comment on the next NPDES Municipal Stormwater Permit.

City commercial plan review staff coordinates with Ecology when reviewing redevelopment projects in the Tideflats, Thea Foss and North Tacoma basins by consulting DOE industrial permit project managers about site history and by submitting a courtesy copy of our plan review comments to Ecology for projects that have private stormwater outfalls.

City staff participated on the Tacoma-Pierce County Health Department's Advisory Committee to update the South Tacoma Groundwater Protection District Ordinance.

#### **GENERAL COORDINATION FOR MONITORING, MAPPING, DATA MANAGEMENT AND MODELING**

The City continues to coordinate a variety of activities with other municipalities and agencies. Issues related to the Flett drainage basin are coordinated with Pierce County, Lakewood, the Pierce Conservation District and WSDOT. Issues related to the cleanup of the Foss Waterway are coordinated with WSDOT, the Environmental Protection Agency, the Army Corps of Engineers, the Washington State Department of Natural Resources, the Puyallup Tribe, various businesses, the "Utilities" group and with Ecology. Activities related to the T-Street drainage basin are coordinated with Pierce County. Activities related to the Leach Creek drainage basin are coordinated with the cities of University Place and Fircrest and the Pierce Conservation District. Activities in NE Tacoma, including the Joe's Creek drainage basin, are coordinated with Federal Way. Activities in the Hylebos Creek drainage basin are coordinated with the cities of Federal Way, Fife, Milton, and Edgewood, and with Pierce and King Counties. Many activities in the Tideflats are coordinated with the Port of Tacoma.

The City has also coordinated activities with the environmental group, CHB. Coordinated activities have included \$10,000 in City financial support for the Bay Keeper Program in 2000, 2001, 2002, 2003 and \$15,000 in both 2004 and 2005, and \$2,250 in funding to support their operation of an environmental hotline and \$2,860 for supplies. The City also received a Public Information and Education (PIE) grant from the Puget Sound Water Quality Action Team to conduct a pilot research and educational stormwater program in a portion of the Thea Foss Watershed. This grant was implemented in 2004 and 2005. The City has also worked with CHB on storm drain stenciling and curb marker placement. Partnerships with this environmental group are continuing into 2006.



## **GENERAL COORDINATION FOR CONTROL OF STORMWATER POLLUTION FROM OTHER JURISDICTIONS**

The City continues to coordinate with other jurisdictions and agencies in a variety of ways. The City participates in the NPDES municipal permittees group, the Puyallup River Watershed Council, the Hylebos Watershed Action Team, the Chambers-Clover Creek Watershed Council, and the APWA Stormwater Managers' Meetings. Funds are provided to the Pierce County Conservation District to support the Stream Team, which is sponsored by Tacoma, Pierce County, and the cities of Puyallup, Fife, Sumner, Bonney Lake and Lakewood.

## **DEVELOPMENT OF COORDINATED SWMPs FOR WATERBODIES SHARED WITH OTHER MUNICIPAL PERMITTEES**

The City coordinates with other municipalities to address stormwater concerns in shared waterbodies as described above.

## **S7B8 Stormwater Control Components**

### **S7B8a Run-off From New Development and Redevelopment Development of an Ordinance Containing Minimum Technical Requirements Equivalent to Ecology's Manual**

The City's Surface Water Management Manual (Manual) was completed in 2002 and implemented on January 1, 2003. This Manual regulates stormwater run-off for all new development and redevelopment projects throughout the City, including residential, commercial and industrial sites and roads. The City's Manual contains the same minimum technical requirements as Ecology's manual, plus two additional requirements. It is currently being revised.

Tacoma Municipal Code 12.08 references the Manual and contains the minimum requirements from the manual and provisions for the inspection of private businesses and the maintenance of private stormwater systems. The ordinance authorizes the Public Works director to implement the Manual. The ordinance was revised during 2002 and the ordinance also went into effect on January 1, 2003. All projects submitting for permits since then have been required to comply with the manual.

The Environmental Services Science and Engineering Division reviews all stormwater and sanitary plans for new development and redevelopment projects. All designs are reviewed for compliance with the minimum requirements including best management practices (BMPs) for erosion control, water quality, and flow control. Plans are also reviewed for compliance with the City's excavation and grading ordinance and the critical area's preservation ordinance. Environmental Services works with both the Building and Land Use Services (BLUS) and Construction Divisions of the Public Works Department to provide plan review for various projects/permits throughout the City, and to review Stormwater Pollution Prevention Plans (SWPPPs) for erosion, sedimentation and pollution control. All stormwater facilities designed by City staff are designed in accordance with the City's manual.

The Environmental Services Wastewater Operations Division also reviews plans for compliance with the Wastewater Pretreatment Standards.

The BLUS Division of the Public Works Department administers the permitting process for all City building permits and land use actions. They collect the permit fees and route all plans to the various City departments for review. BLUS provides conditions for various land use actions such as rezones, subdivisions, wetland and

shoreline permits. BLUS inspectors provide the inspections for all private construction projects including grading and erosion control. BLUS also distributes NPDES Construction Notice of Intent Forms to all developers who have projects that will include one acre or more of land clearing activities. These projects require a separate NPDES Permit from Ecology.

The Construction Division of the Public Works Department administers City projects and all other construction work occurring within City right of way. Their administration includes design review and approval as well as inspection of the constructed work itself. Construction Division inspectors verify that work taking place in the right of way meets City standards, including installation and maintenance of appropriate stormwater BMPs.

Science and Engineering staff now includes two engineering technicians and three engineers, including the team lead. By dedicating a specific team to stormwater plan review, the City continued to increase the timeliness and quality of the plan review process in 2005. They reviewed commercial building plans, private work order plans, land use actions and street vacations for 627 new development and redevelopment projects. The team attended over 400 pre-submittal consultations that identify surface water design requirements prior to applicants' submission of designs for building permits. These consultations allow the City to identify potential erosion and water quality issues prior to plan submittal. They work closely with the source control staff to identify potential source control problems early on. The plan review team also provides comments to the City's building official and to the land use administrator to use as conditions on various land use actions.

The City is working with the Tacoma Housing Authority on the first phase of a four phase project called the Salishan HOPE VI Project. A World War II vintage housing project is being replaced with 1,270 new dwelling units. This housing development uses bioswales and rain gardens to provide water quality treatment for street runoff.



Salishan infiltration system for street runoff.

The City continues to coordinate with WSDOT on the addition of HOV lanes to the SR-16 and I-5 freeways.

The plan review staff continued to work on several other very large projects, including the Stadium High School remodel, the new Narrows Bridge, the BNSF mainline track realignment adjacent to Thea Foss Waterway, the upgrade of the BNSF Dock Street Rail Yard and the extension of the Sound Transit commuter rail from Freighthouse Square to the City of Lakewood.

The Stormwater Program staff is working with a consultant to discuss the possibility of establishing regional water quality treatment and a water quality treatment fee in-lieu of on-site water quality treatment.

During 2005, a staff person from the Surface Water Program continued to work with both the BLUS Division of the Public Works Department and with Tacoma's Economic Development Department in the development of revisions to the City's Critical Areas Ordinance. This ordinance is implemented by BLUS and the revisions were finalized at the end of 2005.

The City is also participating in Ecology's TRC which evaluated five commercial stormwater treatment technologies and three construction runoff treatment technologies in 2005. Based on the committee recommendations, the treatment technologies may be approved to be used for new construction.

#### **S7B8b Existing Residential and Commercial Development Run-off**

The City's current program includes business inspections, drainage complaints, water quality complaints, spill response, interagency coordination, stormwater education, capital improvement projects and a major source control effort in the Thea Foss Waterway drainage basin.

The City has had an ongoing business inspection program for several years. The program focuses on three different types of inspections: Formal business inspections, informal inspections or focused inspections, as well as special projects.

**Table # 3 Complaints, Spills and Business Inspections  
January 2002 to December 2005**

	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
# of Complaints	195	275	266	420
Follow-up	88	166	135	184
# of Spills	48	38	73	66
Follow-up	40	30	37	28
# of Inspections – Planned	106	322	208	117
# of Inspections – Unplanned	106	28	55	5
Follow-up	93	114	55	31
<b>Grand Total</b>	<b>676</b>	<b>973</b>	<b>829</b>	<b>851</b>

The largest classes of complaints received in 2005 involved petroleum products (193), sewage (89), water (flooding/standing/drainage) (77) and mud, silt or muddy water (67).

The following City owned facilities were inspected in 2005: the Asphalt Plant as well as other Streets & Grounds operations, the Tacoma Dome, the Tacoma Rail Railroad Maintenance Facility and the Landfill. Time was also spent at the new Police Facility, which was under construction, regarding erosion issues. Ten educational signs were put up at our regional holding basins and detention ponds. The drainage for the Tacoma Dome was mapped and it was found that 63% of the roof drainage goes to the Thea Foss with the remainder to the Puyallup River. The sump serving the Dome's compactor pad is connected to the sanitary sewer.

The Stormwater Source Control staff received the prestigious Bay Hero award for 2005 from the environmental group CHB. This award recognized their hard work and professionalism in their efforts to improve water quality.



Stormwater Source Control Inspectors receive the Bay Hero Award in 2005.

Tacoma Water has changed their procedures and is now using current best management practices where they drain their reservoirs and standpipes and then dechlorinate the water. The remainder is vactored out, sent to swales or routed to the sanitary sewer.

Numerous Tacoma School District schools were inspected in 2004, including 14 schools that were inspected in response to a WDOE/EPA criminal case for illegal dumping of waste from school grease traps. Cleaning the grease traps had been contracted to a local office of a northwest company. These schools were inspected in 2004 and the requested repairs to their grease traps were completed in 2005.

Stormwater and wastewater source control inspectors hold a monthly spill/claims meeting to share information, coordinate efforts and debrief on significant events. Training on different topics is also provided at these meetings. Meetings were also held with the Port of Tacoma.

The City has a crew trained in mapping physical features of the landscape using a global positioning system (GPS). This system uses satellite data to accurately locate drainage features in the field. Please refer to S7B6 Data Management above for more information about what the GPS crew did in 2005.

The City has an Ecology delegated Wastewater Pretreatment Program. The staff that performs these inspections also looks for stormwater problems. The inspection and sampling program staff conducted 71 formal inspections and 78 sampling events for 28 businesses. Other single purpose visits were conducted and selected sampling of other dischargers was also performed. These inspections and sampling events were completed during the pretreatment program's reporting year, July 1, 2004, to June 30, 2005. The pretreatment staff also review building plans for compliance with the Wastewater Pretreatment Standards and respond to stormwater complaints for the Surface Water Utility staff when they are not available. They also performed 64 oil/water separator inspections in 2005. They also respond to spills for Ecology.

The City has a South Tacoma Groundwater Protection District that is located in the south central part of the City. The ordinance that created the district mainly addresses above and below ground storage tanks and hazardous materials handling, storage and disposal. The Tacoma-Pierce County Health Department

inspects permitted businesses for proper chemical storage. Many of the businesses in this district are located in the Thea Foss Watershed. The health department staff conducted 93 inspections in 2005. All of these inspections were done within the South Tacoma Groundwater Protection District. There are 158 permitted businesses, 140 of which pay a permit fee. Most of those that don't pay a permit fee are public facilities such as fire stations. There were two new permits issued in 2005, a facility that became an EnviroStars certified automotive shop and a facility with waste handling violations. Due to the pending revision of the South Tacoma Groundwater Protection District ordinance, the health department did not actively look for new permitted businesses. The revised ordinance is expected to be adopted in late 2006. Staff from the Surface Water Management Program started to work with the health department in 2005 in the development of revisions to this regulation.

Tacoma has a program called "Tacoma Cares" that focuses on cleanup and revitalization of neighborhoods throughout the City. In 2005, in cooperation with the community, the program facilitated more than 40 cleanups, dealt with 1,343 nuisance cases, removed 256 junk vehicles from private property and completed 13 crime prevention and fence repair projects. The program has a "Blight Mobile" operated by the Solid Waste Utility that helps community groups dispose of litter and debris on streets, alleys and other public rights-of-way. These major efforts have resulted in a cleaner environment, which helps result in cleaner stormwater run-off.

Capital improvement projects (CIP) in 2005 included the replacement of over 3,000 feet of storm line in several large projects. One of these projects included the replacement of 800 feet of aging storm pipe down the side of a steep gulch above Puget Creek. If this project had not been done, the creek would have suffered extreme damage if the old line had failed. Much time was also spent on developing a CIP prioritization process for future replacements and upgrades to the stormwater system. This process will help the program address the biggest problems first.

A lot of time was also spent on evaluating the possibility of daylighting (or recreating a creek channel where the creeks are now in pipes) Mason Creek and Crystal Springs Creek. Mason Creek was not feasible. The lower portion of Crystal Springs Creek which discharges into Titlow Lagoon and Titlow Park will be daylighted in 2006.

On June 1, 2004, the Wastewater Pretreatment Program announced a two-year voluntary compliance period for dental offices, during which they are asked to implement BMPs for hazardous wastes. Because dental amalgam contains approximately 50% mercury, installation of an amalgam separator in the wastewater discharge line is an important management practice, required for compliance at the end of the voluntary period. Dental offices that achieve compliance with BMPs during the two year voluntary period may apply for recognition by the Tacoma-Pierce County Health Department's EnviroStars Program. Most offices that fully implement dental waste BMPs are eligible for the highest, 5 Star, rating. The level of compliance found during inspections that are scheduled for the spring and summer of 2006 will determine whether BMPs will become mandatory for dental offices in the City of Tacoma.

Since April of 1999, the Environmental Services Conservation Loan Program has offered low interest loans for wastewater or stormwater pretreatment, septic system abandonment, and faulty side sewer repair or replacement. In 2005, 32 new loans

were made totaling \$193,607, and 32 existing loans were retired. The program currently has 130 outstanding loans totaling approximately \$446,000.

Two homeowners participated in the Septic Amnesty Program in 2005. This program forgives 50% (up to \$10,000) of the sewer LID fee or fee in-lieu-of assessment if a residential property is connected to the municipal main within two years after it becomes available.

Tacoma is developing a Grease Waste Management Program to reduce the blockages and overflows caused by grease buildup in the municipal sanitary sewer system. Changes have been made to the Tacoma Municipal Code to aid inspections and enforcement and a public outreach and education program is being assembled. A pilot study to determine the most effective methods in both commercial and residential problem areas was started in 2005. The pilot study was started at one commercial and two residential problem areas. For the residential areas, informational materials were handed out and regular re-enforcement of the message is planned for 2006. For the commercial study area, posters and a pamphlet of BMPs were handed out and inspections were conducted. Some of the businesses in the commercial study area were asked to make repairs to their existing grease protection. The study is expected to last at least one year. The goal is to develop the public outreach materials and methods, and see a reduction in the maintenance required in each of the problem areas before taking the program city-wide.

The Tacoma-Pierce County Health Department sponsors an EnviroStars program. This is a voluntary program that awards businesses with excellent environmental practices. Two marinas located on the Thea Foss Waterway were added to this program in 2005. Most marinas situated along the Thea Foss Waterway are now EnviroStars certified.

#### **S7B8c Municipal Storm Sewer Operation and Maintenance**

The Public Works Department has an Environmental Services/Maintenance Division that is responsible for maintaining both the storm drainage and the sanitary sewer systems. The storm drainage system is very large and consists of approximately 18,000 catch basins, 10,000 manholes, 20 detention ponds and 440 miles of pipe. The following table indicates the level of maintenance efforts that were completed during 2005.

**Table # 4 Stormwater Maintenance Activities**

<b>Task</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
# of CBs Checked and Cleaned (includes scuppers)	7,176	4,334	4,369	7,694
# of Culverts Maintained	290	173	192	306
# of Systems Checked and Maintained (includes ponds, holding basins, ditches and miscellaneous structures)	225	250	205	125
# of Manholes Checked and Cleaned (each)	556	332	364	389
# Storm Drainage & Flooding Call Responses	260	582	171	185
Total # of Feet of Mainline Maintained	20,471	31,029	66,600	69,122
Total # of Feet of Mainline TV Inspections	20,687	36,198	68,100	67,830

The Environmental Services Maintenance Division is continuing the development of a comprehensive maintenance program that will extend the life of facilities and systems, and improve system reliability and performance. This program includes

maintenance improvements and modifications, monitoring and evaluation of system performance, and the development of specific performance standards for each maintenance activity. Some of the critical maintenance activities included in the maintenance program are: TV inspections, catch basin inspection and cleaning, ditch inspection and maintenance, and the cleaning of scuppers and sumps.

Sampling of vector waste on a quarterly basis is no longer required. The waste is being taken to the City's Asphalt Plant and is being disposed under their Solid Waste permit.



Maintenance crew cleans out sewer lines.

The City's storm drainage system grew larger in 2005. A total of 10,242 linear feet of storm pipe was installed in 2005 through the private work order process, with an estimated value of \$1,945,310. These lines were installed as part of new development projects and were paid for by the developers using City approved materials and methods. The lines were then turned over or "donated" to the City and became part of the City's system for future operation and maintenance. A total of 3,606 linear feet of publicly funded new storm pipe was added during 2005 and 12,649 linear feet of old existing storm pipe was replaced using public funds. Most of the new storm pipe was added as part of street improvements and the new pipe replaced existing pipe that was "retired."

#### **S7B8d City Road Operation and Maintenance**

The Streets and Grounds Division of the Public Works Department is responsible for road operation and maintenance. This division sweeps the streets, does manual cleaning of stormwater features such as culverts and catch basin grates, has a de-icing and snow removal program, and responds to spills on roadways. Their fall leaf pickup program has been replaced by the City's free curbside recycling program for yard waste offered by Tacoma's Solid Waste Utility. Staff continues to be dispatched during large storm events to check for plugged catch basins in intersections with known flooding problems.

Operations in 2005 were very similar to those in 2004. The City had two or three sweepers in use on a daily basis. Approximately 4,300 miles of streets were swept and 4,500 cubic yards of material were collected. This street waste was disposed of in a licensed, mixed municipal solid waste landfill.

Staff members from the Streets and Grounds Division continued to be very active participants in the Regional Road Maintenance Endangered Species Act Program during 2005. They are currently implementing this program in all the tasks they perform. They have a certified professional in erosion and sediment control on staff,

who is also accredited by the University of Washington to instruct the Regional Road Maintenance ESA Program.

In the past year, the ESA Program Coordinator has applied for and received a Conditional Use Permit to conduct BMP implementation training at the City's landfill. This training is identified as Track 3-F under the Regional Road Maintenance ESA Program. The course curriculum was developed cooperatively with the University of Washington and Ecology. The state has agreed that employees who have previously been trained in the Regional Program's Track 2 or Track 3 curriculum and who complete the Track 3-F curriculum will meet all requirements for erosion and sediment control training as identified in the Western Washington Stormwater Manual and will be entitled to the Certified Erosion and Sediment Control Lead (CESCL) designation. It is the City's intent to begin training staff in this new curriculum during the 2006 calendar year.

This year the City completed a preliminary investigation into the effect on the quality of surface water runoff of a proposed seal coat for chip-sealed roadways called "fog seal". The Streets and Ground Division wanted to initiate a pilot program to use fog seal on chip-sealed streets to provide the appearance of a dark asphalt street. Due to concerns that Polynuclear Aromatic Hydrocarbons (PAHs) may leach from the seal coat into surface waters including the Thea Foss Waterway during rain events, this study was initiated. The fog seal was used at three locations where water was then applied to simulate a storm event, and runoff was then collected from adjacent catch basins to analyze for PAHs and phthalates. The preliminary data suggests there is not immediate measurable negative impact to the environment from the use of fog seal on recently chip-sealed streets. In fact, the seal coat appears to seal in existing pollutants and prevent them from washing off during simulated storm events. However, determining the long-term environmental effects of fog seal will require further study. A summary of the study is attached in Appendix E.

#### **S7B8e Water Quality Considerations in Flood Management Projects**

The City did not have any flood management projects in 2005.

#### **S7B8f Run-off From Pesticide and Fertilizer Application**

Staff and community volunteers participated in a "Natural Yard Day" Program sponsored by a consortium of local governments including King County, Seattle, Thurston County and Tacoma.

Personnel from various divisions of Public Works staffed several booths at Tacoma's Home and Garden Show. They answered questions for the public, many of which related to water quality concerns. Surface Water Management also distributed flyers and posters focused on things that the community could do to protect water quality such as best management practices for car washing, auto maintenance, pet waste disposal, and use of yard chemicals.

The City again sponsored a lawn mower turn-in event at the recycling center at the landfill. Over 150 gas lawn mowers were recycled. The mowers that were turned in were used at the local vocational college to teach students about small engine repair. The City encourages the use of mulching mowers.

The City has a large biosolids-recycling program called TAGRO. TAGRO mix is made from extensively treated wastewater solids that are mixed with sawdust and sand. It is used extensively as a soil amendment. The City recycles 3,200 dry tons of biosolids a year. TAGRO's nutrients are released slowly, and soil conditioned with



TAGRO retains water better. Plants grow very well in soils amended with TAGRO. This program benefits the community on several different levels. TAGRO is used by homeowners on their lawns and gardens. It is also used on community gardens, parks and other non-residential areas such as forests and agricultural areas. In all cases it returns nutrients to the soil. TAGRO mix is also used in a demonstration garden at the central wastewater treatment plant. This garden produces prize-winning vegetables and over 3,000 pounds of food are given to local food banks each year. The TAGRO Program also has a mulch and a potting soil that are very popular. They are made as part of the biosolids-recycling program.

The Streets and Grounds Division of Public Works has made significant changes in their operations. They have changed to using mulching mowers on most areas to reduce the need for insect spraying. They have continued to reduce road shoulder spraying and the use of ground sterilants. They have continued to work to reduce all types of pesticide applications. They continue to choose safer chemicals when pesticide applications are warranted. Many of their employees are licensed pesticide applicators and they have been exposed to Integrated Pest Control Management (IPM) as part of their training. They have also reassessed their expectations and values and are accepting a lower level of "visual appeal" or quality in exchange for providing more protection of the environment.

#### **S7B8g Illicit Storm Sewer Discharge Elimination**

The elimination of illegal discharges is one of the City's top stormwater priorities. The City currently has an ordinance that is used to enforce the elimination of illicit discharges. The ordinance was revised in 2002 and implemented on January 1, 2003.

The City has four staff people working towards the elimination of illicit discharges. When they do business inspections, they provide the business operators with technical assistance regarding the elimination of illicit discharges and they educate business operators about the proper BMPs to use.

The field staff observe or assist emergency response agencies with spill response activities. They provide the agencies with information on the City's stormwater system with the goal of keeping the spilled material out of the system. They responded to 73 spills in 2005 and followed up on 37 of them. They continue to work with mobile washers and their yearly certification program, and with charity car wash operators to insure that these types of washing activities are done correctly. The field staff also responds to general concerns regarding water quality problems, dumping, problems on construction sites and related issues. Some of the dumping complaints involved oil, paint and old computers.

During 2005, the Science & Engineering Division issued four short term Special Approved Discharge (SAD) permits for discharges to the City's municipal storm drainage system from construction sites. Two long term SAD permits are ongoing and are issued to EPA/DOE clean up sites. The permits were issued to insure water quality standard were met and to assess fees for use of the City's municipal storm drainage system. There were no violations of permit requirements during the year 2005.

An oil refinery company reached an agreement with Ecology and the City of Tacoma to reroute the stormwater from its plant. It was rerouted from a very old leaky discharge line with no manholes that goes into the Lincoln Avenue ditch and passes

through a known MTCA site, to a new pipe with inspection manholes. The new line was completed in the fall of 2005 and it connects to the City storm line along Port of Tacoma Road and discharges into the Blair Waterway.

Tacoma Water inspectors reported a remodeling company that was dumping leftover paint down a storm drain. The source control staff responded and had the company clean up the spilled paint. The Tacoma Water inspectors were thanked for their actions and a letter was sent to the company explaining the proper BMPs to use for painting.

Field staff smoke test or dye test when investigating possible improper sanitary connections to the storm drainage system. This insures that there are no improper connections to the storm drainage system, and if there are, they are corrected as soon as possible.

A CCTV/locator is used to verify conditions of both storm and sanitary lines and determine direction and discharge points if plans aren't available. Occasionally the smoke and dye test results are not conclusive.

Two houses in residential neighborhoods and a business located on Puyallup Avenue were found to have their sewers connected to the stormwater system. These connections were eliminated and the systems were connected to the sanitary sewer. City staff also worked with the City of Fircrest to identify and resolve an illicit discharge of sewage, from a duplex located in Fircrest, to the storm sewer system discharging to Leach Creek. This cross connection had existed since the duplex was built in approximately 1980. During the remodel of one of Tacoma's high schools, a storm line was found to be connected to the sanitary system. This was also promptly corrected.

A "doggie daycare" had ongoing problems with animal waste being discharged to the street and then into the storm system. City inspectors made several compliance and technical assistance visits prior to issuing an enforcement order requiring the implementation of BMPs. Through a combination of educating, coaching and working with the business and property owner, plumbing changes were made that diverted this contaminated water to a drain connected to the sanitary sewer where it could receive appropriate treatment.



"Doggie daycare" animal waste in the street

A water supply company was working on a project in unincorporated Pierce County that affected the City of Tacoma. They were dewatering a trench while working on a water service. A muddy torrent of water was running down the street and into the City's stormwater system; BMPs were not being used. The problem was addressed and resolved through cooperation with staff from Pierce County Water Programs.

The City has a household hazardous waste disposal and recycling center located at the landfill. These facilities are open seven days a week, are free to the public and are very popular. In 2005, approximately 176 tons of waste was collected at the household hazardous waste facility. A variety of different recyclables were collected at the recycling center. It provides a place for the community to safely dispose of waste products that otherwise might end up in a storm drain. In the past few years, the household hazardous waste program has added programs to collect cooking oils, mercury thermometers and fluorescent light bulbs.

#### **S7B8h Industrial Stormwater Monitoring and Control**

The City reviews all commercial plans to ensure the private storm sewer systems connecting to the City storm system meet Ecology New Development and Redevelopment Minimum Requirements and provide a Construction Stormwater Pollution Prevention Plan (SWPPP). New construction is inspected by inspectors from the Public Works Construction Division and the Building and Land Use Services Division to ensure compliance with City requirements.

The City has a South Tacoma Groundwater Protection District (STGPD) located in the south central part of the City (including parts of the Thea Foss Waterway Basin, Flett Creek Basin and Leach Creek Basin). The ordinance that created the district mainly addresses permitting and inspection of above and below ground storage tanks. This year, an STGPD ordinance update was initiated with representatives from Tacoma's surface water group participating in the advisory group for the ordinance update. The revised ordinance will incorporate improved public education, enforcement measures and interagency coordination of site inspections for proper chemical storage and source control measures. The Tacoma-Pierce County Health Department inspects these businesses for proper chemical storage. Some inspections are jointly conducted with stormwater source control inspectors and information is shared. Please refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information about this program. The infiltration of stormwater from pollution-generating impervious surfaces in the STGPD is restricted, and exceptions to this requirement must be reviewed and approved by the health department and the stormwater plan review staff.

The City's wastewater source control pretreatment staff inspects industrial sites. They also look for stormwater problems during their inspections. The industrial inspections are coordinated with Ecology staff as appropriate. This coordination includes the referral of problem sites to Ecology when the industry has an industrial NPDES permit.

The City's Solid Waste Utility staff inspects and advises businesses regarding waste disposal, waste reduction and hazardous waste management. They have several programs designed to remove toxics from the environment, including the disposal of fluorescent tube lights.

Oil has been a problem at the abandoned, 1919 era, Northern Pacific Rail Yard (now the BNSF Yard) oil pipeline. This site is located along East D Street and affects Outfalls 243, 245, 248 and 249. Six hundred feet of the line was slip lined and then the City rebuilt the stormwater line with a new manhole and laterals at an approximate cost of \$685,000 in 2004. In 2005 monitoring of the affected outfalls continued to ensure there was no renewal of oil leaks.

A backlog of drainage reports involving stormwater treatment systems was first addressed in 2004. Sites were also inspected in 2005. Our findings that were relayed to the product manufacturers have resulted in product improvements being made. Staff has continued to focus on the need to improve the siting of these facilities in order to keep them away from heavy traffic and landscaped areas and to let the property owners know the importance of proper maintenance. The office recordkeeping of the stormwater treatment systems was improved in 2005.

Catch basin inserts were recently installed at the City's Central Wastewater Treatment Plant facility in order to reduce sediment loads from traffic in the parking lots.

### **S7B8i Stormwater Education**

#### **EMPLOYEE EDUCATION**

The City encourages its entire surface water staff, as well as all other staff working in the construction and water quality related fields, to participate in continuing education. Many staff from throughout the City attended water quality-related training courses in 2005.

The City continued to educate employees about West Nile Virus in 2005. Training was provided to employees on how to respond to questions about the virus over the phone and there were presentations about West Nile Virus at staff and safety meetings. The City coordinated closely with the Tacoma-Pierce County Health Department. The City's response plan was updated.

City staff members also participate in the APWA Stormwater Managers' Meetings, the NPDES Municipal Permittees Work Group, the Puyallup River Watershed Council, the Hylebos Watershed Action Team, Ecology's Technical Review Committee, regional inspectors' meetings and the Chambers-Clover Creek Watershed Council. All of these provide opportunities for additional stormwater education.

In the past year the City's Endangered Species Act (ESA) program coordinator has applied for and received a Conditional Use Permit to conduct BMP implementation training at the City's landfill. This training is identified as Track 3-F under the Regional Road Maintenance ESA Program. The course curriculum was developed cooperatively with the University of Washington and Ecology. The state has agreed that employees who have previously been trained in the Regional Program's Track 2 or Track 3 curriculum and who complete the Track 3-F curriculum will meet all requirements for erosion and sediment control training as identified in the Western Washington Stormwater Manual and will be entitled to the Certified Erosion and Sediment Control Lead (CESCL) designation. It is the City's intent to begin training staff in this new curriculum during the 2006 calendar year.

The Stormwater Program staff also attended many meetings with representatives from the other NPDES Phase I municipalities, and with Ecology staff, to learn about

and provide input to the development of the next municipal stormwater management permit.

The following information lists the water quality related training courses that City staff attended in 2005. It lists the department, the division, the name of the class/workshop/conference and the number of attendees.

### **Public Works Department**

#### **Science and Engineering Division**

Hazardous Materials Refresher – 5  
Regional Stormwater Inspectors' Group Meetings – 1  
University of Washington Construction Site Erosion and Pollution Control – 6  
Marine and Freshwater Toxins, Methods and Safety - 1  
Pacific NW International Erosion Control Association - 2  
Society for Ecological Restoration NW Chapter - 1  
Stormwater: Turning a Potential Problem into an Asset – 1  
LID Technical Guidance Manual for Puget Sound – 4  
Better Biological Monitoring Conference, Adopt a Stream Foundation - 1  
CDS Media Filtration Presentation – several  
Northwest Environmental Summit Conference – 1  
Teleseminar: Building Community Relationships: Gaining and Maintaining Public Consent – several  
Infiltration Facilities for Stormwater Quality Control Class – 1  
Use of Constructed Wetlands for Stormwater Quality Class - 1  
APWA Spring Conference – Stormwater – 3  
APWA Spring Conference – WSDOT's New Environmental Impact Statement Approach – 1  
Hancor Stormwater Quality Unit Product Presentation – several  
WSDOT Tour of Improvements in Tacoma – 3  
White House Conference on Cooperative Conservation - 1  
Stream and Wetland Ecology Basic Training – 1  
Association of Analytical Communities Conference - 1  
Tour of 3<sup>rd</sup> Runway at Sea-Tac Airport – several  
Introduction to Criminal Environmental Investigations – Western States Project – 1  
Pacific Northwest Clean Water Association Annual Conference – 1  
5<sup>th</sup> Washington Hydrogeology Symposium - 1  
Ecology NPDES Workshop – several  
Ecology General NPDES Construction Permit Hearing – 1  
NPDES Permit Program Class – 1  
Law Seminars, Clean Water and Stormwater – 1  
Stormwater Treatment Class – 1  
Hydro Groundwater Course - 1  
Regional Stormwater Source Control Meetings - several  
West Nile Virus workshop – 1  
Shared Salmon Strategy Workshop – 1  
American Water Resources Association Annual Conference – 2  
Workshop on Sustainability – 1  
Salmon Field Trips – several  
Emergency Response Plan Workshop – all staff  
Tour of Thea Foss Waterway Superfund Clean Up – several  
Puyallup Tribe Water Quality Hearing - 2

#### Volunteer Activities by Staff

Washington Department of Fish and Wildlife Steelhead and Cutthroat Policy Advisory Group  
Thurston County Storm and Surface Water Advisory Board (Chair)  
Chairperson, Water Conservancy Board of Thurston County

#### Wastewater Operations and Maintenance Divisions

In-House BMP, Standard Operating Procedures and Spill Training Workshop - over 111 staff

#### Solid Waste Division

Association of Washington Business, Environmental Conference – 1  
North American Hazardous Materials Management Association – 6  
United States Society of Environmental Economists National Conference - 1

#### Building and Land Use Services Division

Pacific NW International Erosion Control Association - 1

#### Construction Division

Pacific NW International Erosion Control Association – 2  
International Erosion Control Association - 1

#### Streets and Grounds Division

12th Annual Conference on the Endangered Species Act - 1  
Chemical Spill Response - The entire Grounds Maintenance staff  
Regional Road Maintenance ESA Program (RRMP) Track 3-F, Field Installation of BMPs – 1  
Better Biological Monitoring Conference, Adopt a Stream Foundation - 1  
43rd Annual Road and Street Maintenance Supervisor's Conference – 1  
Methamphetamine Awareness Workshops - several

#### Tacoma Public Utilities

##### Tacoma Power, Tacoma Water and Click! Network

Hazardous Materials Refresher – 8  
Oil Spill Prevention – 30  
West Nile Virus Workshop - 2

#### **PUBLIC EDUCATION**

The City runs an extensive public educational program. Various educational materials can be found in Appendix F.

Please see the information under staff education above for information about the City's West Nile Virus Program. As in 2004, the City's educational efforts for the West Nile Virus were focused on educating City employees about the risk of the virus and the Tacoma-Pierce County Health Department's educational efforts were focused on the general public. However, the public did benefit from the City's TV show on this topic, a utility bill insert with safety tips, information on the City's web site and an article in the City's quarterly EnviroTalk newsletter.

The second round of the "Make a Splash" Environmental Grant Program was completed during 2005 and a third round was offered. The focus of the grant program is to fund community based projects that concentrate on and actively work

towards environmental education, protection, and restoration. The program has proven to be very successful and popular with the community. During the third round, nineteen grants were awarded for a total of \$45,500. The grants were awarded to very diverse community groups, including the First Presbyterian Church School, the Boy and Girl Scouts, Blueberry Park Volunteers, Celebration Park Citizens, Associated Ministries, My Service Mind, Tahoma Audubon Society, the Nature Center, the Friends of Swan Creek and others. Community members again came up with a variety of activities that were sponsored by the program. Some of them are summarized below:

- First Presbyterian Church School, environmental education field trips and a salmon in the classroom program.
- Blueberry Park Volunteers, planting of native species.
- Boy and Girl Scouts, education of scouts on environmental issues.
- Associated Ministries, development of an environmental stewardship class.
- My Service Mind, watershed and water quality education.



"Make a Splash" grant project team.

The City continues to be one of the major sponsors of the Pierce Conservation District Stream Team, a multi-jurisdictional effort. The City provides \$25,000 in financial support and some supplies to the Stream Team each year. They offer programs such as wetland and stream bank cleanups and revegetation, workshops, and tours for the public. The Stream Team has a water quality booth that is displayed at various community events including the Puyallup Fair. The Stream Team has a very large, active group of volunteers with approximately 500 Tacoma residents in their database. Some of their activities in 2005 included:

- Starting a lake water quality monitoring program.
- Water quality monitoring at various creeks in Tacoma.
- Storm drain stenciling with University of Puget Sound students.
- Water quality training at Swan Creek for the Resource Conservation Stewards class.
- Teaching a water quality and macroinvertebrate workshop for students attending camp at the Tacoma Nature Center
- Coordination with Friends of Swan Creek community group.



Storm drain stenciling by local volunteers with the Pierce Conservation District Stream Team.

The City also continues to coordinate activities with the environmental group CHB. Joint activities included: \$15,000 in City financial support for the Baykeeper Program, part of the National Keeper Initiative; \$2,250 in funding to support operation of an environmental hotline; \$2,860 to support clean bay boating kits distributed to marinas in Commencement Bay, with a particular focus on the Thea Foss Waterway, site of the City's Superfund cleanup; storm drain stenciling; curb marker placement; native plant plantings and salvage. The City sponsored 200 boating kits that were distributed to all marinas located on the Foss Waterway. The kit contained: absorbent pad, fuel bib, bilge pillow, informational magnet, South Puget Sound guidebook, floating key chain, instructions for product use, and trash bag. This effort was in conjunction with both CHB and the Tacoma-Pierce County Health Department EnviroStars program. The focus of the kits was primarily fueling BMPs and promotion of pump out facility use. CHB has a base of more than 600 volunteers in the greater Tacoma area. Partnerships with this environmental group are continuing into 2006.

The City and CHB partnered in 2004 and 2005 for an educational pilot program called "Only Rain in the Drain." The program, centered on automotive washing and maintenance, reached more than 5,500 residents living in the downtown Tacoma area that drains directly into the Thea Foss Waterway. Car care messages were delivered to home owners and fourth and fifth grade students at local elementary schools. Results from the pilot program were positive. Many residents indicated they would change their behavior to more environmentally-friendly methods of disposing of motor oil and washing their cars. Additional outreach will continue in 2006.

During 2005, the City supplied curb marking and stenciling supplies to both CHB and Stream Team to pass out to groups wishing to stencil and mark storm catch basins. The City also supplied large watershed maps to help institute a tracking system for marked and stenciled storm drains within the city. Areas of concern such as the Thea Foss drainage will be prioritized.

Surface water management is continuing to work with Metro Parks Tacoma to support a variety of educational efforts that focus on stormwater and marine life at the Point Defiance Aquarium. 2005 was the final year of a five-year \$100,000 grant (\$20,000 per year) that supports a joint educational effort. In 2005, these monies provided staffing (March – December) and equipment for the Marine Discovery Center. The goal is to strengthen the connection between non-point source pollution and the health of Commencement Bay waters in the minds of the visitors through



interactions with live Puget Sound marine animals and hands-on activities. Between April and December of 2005, 168,312 people visited the Marine Discovery Center at the aquarium. This was an increase of 111% over 2004.

Tacoma's Resource Conservation Steward Program is a volunteer community education program designed to help spread the word about resource conservation to Tacoma residents. Volunteers receive 40-hours of free training in resource conservation, waste prevention, water quality, home composting, natural lawn care, and alternatives to household hazardous waste. In exchange, volunteers make a 40-hour commitment to share the knowledge and skills they've gained with Tacoma residents. Resource conservation stewards make an invaluable contribution to the community as they educate residents in local neighborhoods, schools and workplaces. Stewards provide useful information that helps City of Tacoma residents make informed decisions about waste prevention, the wise use of resources and ways to minimize the environmental impacts of our everyday activities. Since the program's inception in 2002, 65 volunteers have contributed over 1,600 hours of community service at 140 community events.



Resource Conservation Stewards and Stream Team monitoring Swan Creek.

The EnviroChallenger program has proven to be a very popular educational tool and now has two full time educators. These staffed, mobile, educational units visited 34 of 36 Tacoma public elementary schools, several private schools and various community centers, providing environmental education to K-8 children. The educational programs include lessons focused on: Water Quality, Watersheds, Recycling and Waste Prevention, Household Hazardous Materials, Salmon and the Endangered Species Act, Wastewater Treatment, and Worm Composting. In the 2005-06 school year, the watersheds and worm composting lessons will no longer be offered, though the lesson materials are available online. Also, the EnviroChallenger program added two middle school programs and dropped the programs for grades K-1 for the 2005-06 school year. Pre- and post-lessons are mailed to teachers and post-visit take home activities are left following the in-class lessons. Education is a year-round activity for the EnviroChallenger educators. They teach during the school year and also throughout the summer at summer school programs and community-based day camps.

The EnviroChallenger messages reached approximately 24,058 kids in Tacoma during the 2004-2005 school years through 1,046 classroom and community presentations. The City of Tacoma is very proud of this extremely successful program. Additional program accomplishments during 2005 include:

- Initiated e-mail lesson confirmations to reduce waste.
- Developed second wastewater lesson and revamped the household hazardous waste lesson (now greener cleaners) for grades 2-5.
- Developed recycling/waste reduction and greener cleaners lesson for grades 6-8.
- Partnered with CHB for “Only Rain in the Drain” Pie Grant Program.
- Participated in worm composting project at Lister Elementary, a milk carton recycling project at Manitou Park Elementary and a Pt. Defiance Elementary back-to-school day.
- Staffed booths/participated at National Night Out, Proctor Arts Fest, McKinley Street Fair, South Tacoma Classic Car Show, Farmer’s Market, World Ocean Day, University of Washington Tacoma Science Fair, American Public Works Association Conference, Northwest Trek Earth Day, Point Defiance Zoo and Aquarium Earth Day event, Kid’s Health and Safety Fair, Tacoma Public Utilities Dam Open House, Children’s Water Festival, Ethnic Fest, Fern Hill Days, Maritime Fest, and Point Defiance Zoo and Aquarium career day.
- Received two awards for the EnviroKids Web site – the National Association of Clean Water Agencies e-media award and the APEX Grand award for publication excellence given by the Editors of *Writing that Works*.

City staff provided public education relating to the Thea Foss Waterway clean up project. Presentations about the Foss were given to a University of Washington - Tacoma graduate-level urban studies class, representatives from the Environmental Protection Agency’s National Estuary Program and to a regional public information group. Information on the Foss, habitat restoration sites and general surface water education was presented at the Commencement Bay Maritime Fest and the National Conference on Coastal and Estuarine Habitat Restoration. A tour of the Foss was given to Ecology and EPA managers and to interested government officials who were here from Nova Scotia. The Canadians face a similar cleanup and wanted to know about how to involve the community with the cleanup.

Personnel from various divisions of Public Works staffed several booths at Tacoma’s Home and Garden Show and University of Washington - Tacoma’s Science Day. They answered questions for the public, many of which related to water quality concerns. Staff participated in a variety of other educational activities such as Channel 12-TV Tacoma appearances on a talk show program called “CityLine” and on a news magazine show called “CityScape,” as well as providing public information about the City’s cleanup construction activities to such news organizations as The News Tribune, Seattle Daily Journal of Commerce, Business Examiner, KING 5 TV and KPLU and KOMO 1000 radio stations. A CityLine segment featured the Washington Conservation Corps program and the environmental work that this crew is doing for Tacoma.

Staff also assisted with the Stream Team’s water quality booth at the Puyallup Fair. The Stormwater Program’s staff and boat were at the Maritime Fest on the Thea Foss Waterway and staff were at the Tall Ships Festival. Staff also participated with public plantings at the Tahoma Salt Marsh site and during the Foss Maritime planting. A tour of City mitigation restoration sites was given to University of Washington - Tacoma students which included discussion of stormwater runoff and development of stream flows. Personnel also participated in staffing a booth at NatureFest and spent time stenciling storm drains. Solid Waste staff spent considerable time on the Northwest Natural Yard Days program and also planned for the EnviroHouse, which was sited at the landfill in 2004. The EnviroHouse will

feature green building practices, energy efficient appliances and a native landscape. Surface water staff also distributed fliers and posters focused on things that the community could do to protect water quality by using best management practices for car washing, auto maintenance, pet waste disposal, and the use of yard chemicals.



Tall Ships Festival

Environmental Services supported the regional Northwest Natural Yard Days campaign which is a partnership between local government agencies and retailers to discount natural yard care products such as compost, water timers and mulching lawnmowers. The partnership is based on the five steps to natural gardening: build healthy soil, plant right for your site, practice smart watering, and think twice before using pesticides and practice natural lawn care. Local advertising and promotion helped push environmentally-friendly behavior and sales figures upward in 2005.

Environmental Services staff worked with the Natural Resource Damage Assessment (NRDA) Trustees to design interpretive signs for the council's six restoration sites. An interpretive sign was installed at the Swan Creek Restoration site. A tour of the Swan Creek site was given to approximately 10 persons involved with the Friends of the Swan Creek Watershed community group. Additionally, the City finalized the interpretive sign for the Tahoma Salt Marsh restoration site and will install the sign in 2006. The City also has a web site for the NRDA program.

Environmental Services developed and distributed its "Envirotalk" Newsletter. The newsletter, which is printed on recycled paper, includes articles relevant to the Surface Water, Wastewater and Solid Waste Utilities and is distributed to 53,000 single-family residences in Tacoma four times per year.

The Clean Bay Car Wash Kits are offered to the public at no charge. These car wash kits are loaned to nonprofit groups to ensure that dirty wash water from fund-raising car washes is discharged safely to the sanitary sewer instead of the stormwater system. The City maintains six car wash kits. The kits were used 20 times in 2005 by various groups, which is an increase of 67% over 2004. The inaugural message of the Tacoma-EnviroNews listserve featured the Clean Bay Car Wash Kit program and the program was also featured in a utility bill mailing.

Our staff made several major presentations about our innovative stormwater monitoring and source control programs for the Foss Superfund Site. These included presentations at the StormCon 2005 National Conference, the International Erosion Control Association Conference and three presentations at the Pacific Northwest Clean Water Association Annual Conference and a presentation at the

43<sup>rd</sup> Annual Road and Street Maintenance Supervisor's Conference. City staff also spoke about stormwater-related issues at a Field Inspector Conference, the Puyallup River Watershed Council, a Master Builders' meeting and Tacoma's Resource Conservation Stewards program. A staff person also provided training about methamphetamine laboratory awareness to the City's Streets and Grounds and Sewer Transmission crews.

Surface water inspectors routinely educate citizens during complaint resolutions and businesses through compliance inspections. An example of a successful education opportunity that resulted from a routine inspection occurred at a local muffler store. An unannounced inspection of the muffler store was made. During the inspection, the manager was asked what their standard procedure was for cleaning up automotive fluids spills. He proudly announced that they use a mop bucket with hot water and Tide detergent to clean up their spills. He showed the inspectors the emulsified petroleum waste in the shop bucket. When asked how they dispose of this waste, the manager quickly responded that they pour the dirty, oily waste into the grate on their property. This "grate" turned out to be a private catch basin connected to the City's municipal drainage system. This practice could easily account for intermittent sheens observed on the Thea Foss Waterway. We issued a Surface Water Management Field Inspection Report directing the store to clean their storm system and cease dumping waste into their catch basin. A follow up inspection confirmed the implementation of the requested BMPs.

In 2005 the City began an effort to install 23 educational signs about water quality adjacent to the regional holding basins and detention ponds by the Washington Conservation Corps crew. Ten signs were installed in 2005. The crew was provided with water quality training so they could educate nearby residents. This project will continue into 2006.



Information signs installed at regional stormwater ponds by WCC crew.

The plan review team works with permit applicants on a regular basis and helps educate them about the requirements and intent of the stormwater management manual. Education about low impact development is also offered.

The Tacoma-EnviroNews listserv launched in the summer of 2005 to share local environmental news with citizens, reporters, non-profit organizations and City staff. The City sends information to the list of almost 200 people and subscribers can send messages as well to promote such environmental programs as native plant sales, volunteer opportunities, stream restoration events and community workshops. Almost all subscribers have affirmed that they are using information sent to the list and they want to keep the listserv active.

During 2005, Tacoma Water also provided a variety of projects and programs to help promote water education.

Tacoma Water once again participated in Tacoma/Pierce County Children's Water Festival (March 24) with approximately 1,000 fifth grade students attending the event at Pacific Lutheran University.

Tacoma Water's education program, AquaQuest, introduced the Tacoma Water system to elementary school students and provided tours of the Green River Watershed and McMillin Reservoir. There were 217 students in the program in 2005.

The annual Tacoma Water Haiku Writing Contest provided the following winner, Elise Johns, fifth grade student from the Visitation School:

***Listen to the Dance  
Of rain soaking into earth  
Makes it fresh and Clean!***

As a partner in the Water Conservation Coalition of Puget Sound (WCCPS), Tacoma Water coordinated the production of the Youth Education Committee's "Shared Waters" water education activity booklet for elementary school students. Twenty thousand booklets were printed and distributed by Tacoma Water in 2005 within its own service area and to the WCCPS members in Snohomish, Kitsap, King and Pierce Counties.

Tacoma Water and the Tacoma Rainiers baseball club teamed up to present the Tacoma Rainiers Kids' Club. Nearly 1,000 youngsters participated in the club receiving discount tickets to games, souvenir items and the opportunity to attend a season-ending barbeque family luncheon.

The Green River Watershed was the destination for the annual Community Resources tour for school teachers sponsored in part with Tacoma Public Schools and The Tacoma-Pierce County Chamber of Commerce. Twenty-five teachers visited the Tacoma Water Headworks and new diversion dam.

Tacoma Water provided a tour of the Green River Watershed for the University of Puget Sound's geology students. The students visited the Headworks, new Diversion Dam and fish passage facility, Howard Hanson Dam and the North Fork wells.

Tacoma Water introduced a new groundwater pollution model that allows students to learn more about groundwater and how to protect it. The model was on display at the Puyallup Fair in September along with "Water Concentration," a game for kids to learn about protecting water resources and how we can use water wisely.

### **S12 Thea Foss Waterway Basin Program**

The City's NPDES Municipal Stormwater Permit, issued in 1995, contained a special provision requiring the development of a stormwater program specific to the Thea Foss Waterway. Much of the work to establish the program was done in 1995 and early 1996, prior to this reporting period.

Source control activities conducted within the Thea Foss Waterway Basin during 2005 are documented in the Quarterly Source Control Reports submitted to Ecology and EPA. In 2005, source control efforts within the Thea Foss Waterway Sub-watershed continued to focus on outstanding issues and concerns. A detailed list of ongoing issues and concerns has been compiled by the Stormwater Source Control Workgroup, consisting of representatives from the City of Tacoma, Ecology, EPA, the Thea Foss Participants' Group, the University of Washington - Tacoma and CHB. The work group meets semi-annually to cooperatively discuss and provide status updates on each action item.

### **Stormwater Workplan Addendum**

Under a Unilateral Administrative Order dated September 30, 2002, and a Consent Decree with the Environmental Protection Agency (EPA) Dated May 9, 2003, the City is currently engaged in remediation of marine sediments in the Thea Foss and Wheeler-Osgood Waterways in Tacoma, Washington. This work is scheduled to be completed in early 2006. Following the cleanup action, it will be necessary to continue monitoring and source control activities to ensure sediment quality is protected in dredged and capped areas. As part of the Consent Decree Statement of Work, a letter addendum dated November 1, 2001, (i.e., Attachment 1) provides a detailed schedule and work plan for the City's stormwater source control efforts for Thea Foss and Wheeler-Osgood Waterways (Thea Foss Post-Remediation Source Control Strategy). This was a major staff focus. The City is the first municipality to do this type of work, and is breaking new ground while serving as a model for other superfund sites.

This Stormwater Work Plan Addendum included a description of stormwater monitoring efforts, studies, source control efforts and BMP assessments for municipal stormwater sources. Based upon these various efforts and evaluations, an approach for future stormwater source control decision-making is also provided in the work plan. A schedule for these activities is also included. Specific activities outlined in the document and their current status is as follows:

1. Phthalate Source Study for Thea Foss and Wheeler-Osgood Waterways – The City is gathering information on phthalates within our community, specifically the magnitude of its presence in the environment, where it is found in the city, and its source(s). This phthalate source study is comprised of two phases, Phase I and Phase II.

Phase I of this study was to evaluate business types/land uses versus BEP levels found in area catch basin (CB) sediment. Two samples were taken at each of a number of selected locations: One from an on-site CB and the other from a CB in the right of way nearest the site. CB locations with elevated phthalate concentrations appear to be linked to tire wear, cars, and high traffic businesses and areas. The higher incidence of phthalates is associated with the rights-of-way (ROWs) in the commercial/industrial land use areas, in particular fast food ROWs and automobile ROWs. Most of these sources appear to be ubiquitous and associated with general urbanization.

The Phthalate Source Study Phase II looked at specific products. The City, Seattle Public Utilities (SPU), and King County Department of Natural Resources outlined a participation plan for the Phase II sampling in an effort to increase the robustness of the study. The City of Tacoma Laboratory completed the analysis on the solid matrixes and Metro/King County Laboratory completed the analysis on the liquid matrixes.

In addition, the City analyzed roof wipe samples collected before and after cleaning the Tacoma Dome roof. These samples indicated that a large majority of the BEP in the

sample collected before cleaning was attributed to atmospheric deposition rather than the underlying roofing material.

Automotive sources of BEP should also be considered given that two of the three used motor oil samples contained significant concentrations of BEP, but none of the unused/new oil samples contained BEP above analytical detection limits. King County's literature review also suggests that some fuel products, such as diesel, contain BEP that may be released into the atmosphere in the exhaust (King County and SPU 2005). This theory is supported by results from sampling of the Tacoma Dome roof. The next step is to continue to partner with King County and SPU to test for the presence of phthalates in the air.

2. Total and Dissolved Constituents in Stormwater for Thea Foss and Wheeler-Osgood Waterways. The City has requested that EPA eliminate the requirement to perform this study as it was determined it would not provide necessary information for future analyses. The City is currently awaiting EPA's response to this request.

3. WSDOT/UW and other Stormwater Technology Studies - In 2003, several storm samples were collected on one treatment technology at the WSDOT Ship Canal facility. On September 9, 2003, the City received and City Council accepted a \$500,000 grant from the Federal Highway Administration, 2003 Transportation Community and System Preservation Pilot (TCSP) Program for the Thea Foss Waterway Stormwater Study. The City is using a portion of the grant to continue the study and evaluation of the effectiveness of various treatment methodologies for stormwater from road and highways using the Ship Canal Test facility. The remainder of the grant will be used to study stormwater projects in Tacoma.

In July 2005, stormwater sampling was continued with testing on two treatment technologies at the Seattle Ship Canal Test Facility, the StormFilter and AquaShield-AquaFilter. Testing on the first facility was completed in December 2005 with a total of 17 storm events sampled. It is anticipated the report will be completed in the summer of 2006. The second technology unit was updated and hydraulic testing was completed in 2005. It is anticipated that sampling and reporting on this unit will be completed in 2006 to 2007.

Following the completion of each technology's testing period, the City will evaluate the technology's effectiveness and applicability and reasonableness for use of this technology within the Thea Foss Watershed. Reasonableness shall take into consideration effectiveness, maintenance requirements, flood control and cost in comparison to the effectiveness achieved to date in the Thea Foss Watershed as a result of the current source control program.

4. Source Control Program - Quarterly and Annual Source Control Summary Reports are submitted to EPA and Ecology under this program. The 2004-2005 Source Control Report was submitted to EPA in March 2005 and it included an updated Source Control Workplan. Several of the actions mentioned in the Quarterly reports are listed in Section 7, Identification of Known Water Quality Improvements or Degradation.

5. NPDES Stormwater Monitoring for Thea Foss and Wheeler-Osgood Waterways - The NPDES Stormwater Monitoring for Thea Foss and Wheeler-Osgood Waterways is conducted under an Administrative Water Quality Order No. DE 01WQHQ-3241 issued by Ecology on September 13, 2002, and amended August 11, 2004.

### **Water Quality Order for NPDES Stormwater Monitoring**

Since August 2001, the City has been conducting the NPDES Stormwater Monitoring Sampling and Analysis Program. Under the program, seven outfalls discharging to the waterway are to be monitored for five years. Ten storm samples and four base flow samples are to be collected at each outfall per year. In addition, sediment trap samples at each of the outfalls are to be collected every fall/winter of each year. Upstream samples are also taken to help identify hot spots and sources. The resulting data was summarized and evaluated in the Stormwater Monitoring August 2001-2005 Report. The report was submitted to EPA and Ecology in December 2005. This type of monitoring is very labor intensive and a lot of staff time has been spent in this area.

### **INSPECTIONS**

In 2005, stormwater specific inspections were conducted at businesses within the Thea Foss sub-watershed and other watersheds.

Ongoing inspections of ponds and municipal stormwater facilities continued. The very detailed Source Control Quarterly Reports contain summaries of the Foss Basin inspection activities and are available for review.

Several City-owned facilities located in the Thea Foss sub-watershed were inspected during 2005. The facilities included the Asphalt Plant as well as other Streets and Grounds Maintenance operations and the Tacoma Dome. The inspections were performed in the same fashion as those of private business/industry. Refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information about the inspection of City-owned facilities.

### **EDUCATION**

The City continues to provide residents and businesses with educational handouts and pamphlets pertaining to BMPs and the Thea Foss Waterway cleanup. Residential letters and pamphlets are distributed in neighborhoods following complaint investigations. During inspections, businesses are provided both general and specific BMPs targeting applicable activities. Staff participated in the University of Washington – Tacoma Science Fair, the Fest (formerly Maritime Fest) and Tall Ships event held on and next to the Thea Foss Waterway.

Field inspections responding to spills and complaints and formal business inspections resulted in 38 records of documented educational opportunities in general house cleaning tips and implementing best management practices for businesses in the Thea Foss Basin.

In 2003, CHB and Environmental Services applied for and received a PIE grant from the Puget Sound Water Quality Action Team to conduct a pilot research and education program on stormwater pollution called "Only Rain in the Drain." During 2004 to 2005, the program, centered on automotive washing and maintenance, reached more than 5,500 residents living in the downtown Tacoma area drained by stormwater Outfall 230. Results from the pilot program were positive. For additional information, see Section S7B8i Stormwater Education.

The goals of this project are to (1) increase general awareness among targeted residents about stormwater pollution; (2) increase residents' aspirations to adopt automotive maintenance behaviors that reduce stormwater pollution; (3) improve actual automotive maintenance behaviors to reduce stormwater pollution; and (4) measure a resulting decrease in actual stormwater contaminants.



Please refer to Appendix F for an example of an educational brochure used in the Thea Foss cleanup. There is also educational information on a web site at [www.cityoftacoma.org/fosscleanup](http://www.cityoftacoma.org/fosscleanup).

#### **COMMERCIAL AND INDUSTRIAL MONITORING**

A variety of activities were completed with respect to the monitoring of commercial and industrial sites.

Oil has been a problem at the abandoned, 1919 era, Northern Pacific Rail Yard (now the BNSF Yard) oil pipeline. This site is located along East D Street and affects Outfalls 243, 245, 248 and 249. Oil/tar reappeared at the MH-394 pom poms (oil snares) after seven months of no oil. We thought our interim action (slip lining) had stopped the release but a TV inspection at low tide found oil now entering at lateral connections. A new intensive effort of investigation and remediation was completed. In 2005, the City rebuilt the stormwater line with a new manhole and laterals costing in excess of a half million dollars.

During this work, an additional underground tank was found at a local business and may also relate to this release. On January 31, 2005, Ecology sent Enforcement Order Number 1915 for the BNSF Oil Pipeline Site to several businesses, WSDOT and the City of Tacoma. In 2005, Ecology oversaw the tank pumping and further investigations are continuing.

#### **MAJOR CONSTRUCTION PROJECTS**

Many of Tacoma's recent and very large construction projects have taken place in the Thea Foss Watershed and required a great deal of work and coordination from the surface water management staff. These big projects include the I-5 and SR-16 improvements, Tacoma schools remodels, the St. Joseph Hospital expansion, new condominiums, the esplanade along the waterway, facilities for Sound Transit, and the ongoing expansion of both the University of Washington - Tacoma campus and the Port of Tacoma.

The Environmental Services Engineering staff developed new standard specifications for construction dewatering discharges including testing and water quality monitoring requirements.

Major environmental cleanup of the Thea Foss and Wheeler-Osgood Waterways is finishing up. The City is nearing the end of the four-year project involving remediation of the contaminated sediments in these waterways. When the project is completed in early 2006, the City will have dredged about 425,000 cubic yards of contaminated sediments - enough to fill more than 30 Museum of Glass cones -- from the waterways and placed them in a nearshore confined disposal facility in the St. Paul Waterway. As part of the cleanup plan, the City also built a new marina and several marine habitat areas. As of December 2005, the City had accomplished the following:

- Completed construction of a new marina on the west side of the Thea Foss Waterway in front of Albers Mill, the Museum of Glass, and Thea's Landing condominium and apartment building. This marina will be used during construction to temporarily house boats moored at other marinas as those marinas are dismantled to allow for remediation. Following construction in these areas, the existing marinas are reconstructed. The new marina will remain in the waterway as a permanent enhancement after the project is completed.

- Deepened the St. Paul Waterway to increase its capacity in order to build a disposal facility to confine contaminated sediments dredged from the Thea Foss and Wheeler-Osgood Waterways.
- Placed the clean sediments, excavated from the St. Paul Waterway during deepening, on the Puyallup River Delta to enhance marine habitat.
- Completed dredging approximately 425,000 cubic yards of contaminated sediments from the Thea Foss Waterway and the Wheeler-Osgood Waterway, and continued placement of capping materials on the shoreline and channel areas.
- Constructed sheet pile walls in some areas to replace existing walls and to support dredging activities.
- Continued with construction of several habitat mitigation areas in the Thea Foss Waterway, Middle Waterway, on the bay side of the nearshore confined disposal facility, in the Puyallup River, and on Hylebos Creek. Special construction challenges were addressed when old explosives were discovered at the Puyallup River construction site.
- Worked with private marina owners as they replaced and reconfigured portions of their marinas in more environmentally friendly layouts.
- Worked with EPA and a group of private utilities (that had performed in-water work at the head of the Foss Waterway) to correct a recontamination situation that had occurred when the City was performing dredging activities in an area immediately adjacent to their completed cap (see below.)

### **Sediment Contamination Incident**

Under separate Consent Decrees with EPA, the City and a group of private utilities are performing sediment remedial actions in the Thea Foss Waterway. In February 2005, the Utilities completed the remediation of the southernmost 1,000 feet of the waterway. Limited amounts of dredging were completed, and the area was capped with clean materials. In August, prior to the City dredging in the area immediately north of the Utilities' work area, pre-dredge samples were taken on the Utilities' cap. Three weeks later, after dredging activities were completed, post-dredge samples were taken. The post-dredge samples showed elevated concentrations of several contaminants.

In response to these elevated concentrations, the City worked with EPA, the Utilities, and CHB on a plan to determine the cause of the contamination. Three potential sources were identified:

- Dredging/construction residuals.
- Stormwater.
- Utility cap failure.

Additional sampling, analysis, and evaluation of each of these three potential sources were performed. For the storm drains, this included review of sampling information, rainfall records, spills reports, etc. In addition, a mass balance analysis was completed. These analyses concluded, and all parties agreed, that stormwater was not the source of the contamination on the Utilities' cap. Even though the City's contractor was following the best management practices established for the project, dredging/construction residuals were determined to be the primary cause of the problem. Additional BMPs and modifications to the construction sequence were implemented to reduce the possibility of a reoccurrence. Additional capping material was placed on the utilities cap area in late 2005 as a corrective action.

## **Coordination**

The City's contractor working on the sediment remediation project has been cooperative and responsive in assisting the City with spill response during the course of the year. In response to several spill incidents upstream of their work, the contractor has provided assistance with placement and maintenance of booms and timely reporting of incidents that they have observed while working on the water

## **SPILLS**

No significant spills reached the Thea Foss Waterway during 2005, although City staff responded to a large number of spill and pollution complaints. Spill and pollution reports are properly reported to the appropriate agency and compiled in the quarterly progress reports. Please refer to Section S7B8b Existing Residential and Commercial Development Run-off for more information on spills and other pollution complaints.

The City contracted with an environmental group CHB, for environmental hotline services. CHB's hotline number (253-383-2429) was operational throughout 2005; one hundred calls were received in 2005. As in previous years, many of the calls were related to petroleum products, soap/detergent/foam and paint.

## **2. Notification of Any Recent or Proposed Annexations or Incorporations**

A small area located in unincorporated Pierce County near East 91<sup>st</sup> and McKinley Avenue was annexed into the City of Tacoma in 2005. The annexed area is located near the southeast corner of Tacoma.

## **3. Differences Between Planned and Actual Expenses**

Relating the planned expenditures in each of the above categories to the actual expenditures was still very difficult in 2005. The City's budget and fiscal tracking systems are not structured to fit the NPDES needs. They were developed to comply with the state auditor requirements and conform to the Government Accounting Procedures.

## **4. Revisions, if Necessary, to the Remaining Years of the Fiscal Analysis Reported in the Approved Stormwater Management Program**

Revisions to the fiscal analysis section are not necessary.

## **5. For the Fourth Year Report, a Summary and Analysis of the Cumulative Monitoring Data Collected Throughout the Term of the Permit**

The fourth year report was submitted in September 1999.

## **6. A Summary Describing Compliance Activities, Including the Nature and Number of Official Enforcement Actions, Inspections and Types of Public Education Activities**

The BLUS Division of Public Works is responsible for the permitting of a wide variety of land use activities throughout the City. They issue residential and commercial building permits, clearing and grading permits, and permits for shorelines, wetlands and other critical areas. They also process all land use permit applications including short plats, formal plats and other activities. During 2005, the following actions were taken:

**Table # 6 Building and Land Use Services Division,  
Permits, Inspections and Enforcement Actions**

	2003	2004	2005
Erosion control inspections	1522	2915	3062
Grading and filling permits	47	44	52**
BMP failure inspections	58	165	109
Tracking sediment off-site	45	61	4
Grading inspections	40	*	*
Wetland permits	12	36	42
Wetland inspections	82	110	257
Wetland enforcement actions	9	14	10

\* Combined with erosion inspections for 2004 and 2005

\*\* Only includes those grading projects done under a separate grading and excavation permit. Does not include grading done under a building permit.

The BLUS Division of Public Works continued to employ a consulting firm in 2005 to perform wetland inspection and permit analysis in order to allow the permanent wetland specialist the time to work on the rewrite of the Critical Areas Ordinance. Phase I (interim) and Phase II (new) changes to the Critical Areas Preservation Ordinance were completed and Phase III (shoreline) is now underway along with the updates to the Shoreline Master Program. The BLUS Division hired another permanent senior environmental specialist in 2005 to assist with the increasing workload brought on by the changes to the Critical Areas Preservation Ordinance. The consultant contract was also retained through 2005. The wetland totals above are the combined effort of both the consultants and the permanent staff people.

Wetland enforcement actions were counted for those actions that were a complaint, or violation of conditional approvals. Although all monitoring, maintenance and follow-up on conditions could be considered a type of enforcement, these enforcement actions do not include permit condition enforcement such as “notice on title” documentation, storm plan review, site visits to verify installation and monitoring plans, etc. However, failure to comply with conditions is included in the violations noted above. Site visits for these enforcement actions would be reflected in the wetland inspection count.

The Science and Engineering Division staff continued to use the spills and complaints database tracking system in 2005. All complaint calls and spills as well as claims, most business inspections, sanitary sewer overflows (SSOs) and emergency flooding calls are now tracked. Please refer to Section S7B8b Existing Residential and Commercial Run-off for more information on this tracking system and the number of complaints received. For the most part, these types of complaints were taken care of through education of the citizens involved. If appropriate, field compliance letters were issued and formal certified letters were sent. Please refer to Table # 3 Complaints, Spills and Business Inspections on Page 19 for more information about this program.

A “doggie daycare” had ongoing problems with animal waste being discharged to the street and then into the storm system; this problem was resolved. Please refer to Page 26 for more information about this business.

An agreement was reached with a company that had received a notice of violation. The case went before Tacoma’s Hearing Examiner. As part of the agreement, the company agreed to improvements to their following operations: repair of all roll-off storage bins, maintenance of a sump pump, improvements to a berm, produce and distribute a training guide for employees and to follow a compliance schedule.

The surface water staff also responds to erosion and sediment control complaints. Problems ranged from lack of, or improperly installed silt fencing, to tracking of sediments onto City rights-of-way.

Staff from Ecology also responded to many water quality complaints and concerns within the City during 2005 and they coordinate closely with City staff. Often, these cases are referred to City staff for inspection. Some of these sites may have been located in unincorporated areas outside of the City limits of Tacoma, but were tracked as having a Tacoma address. Ecology staff provided the following numbers:

**Table # 7 Ecology Response to Complaints and Spills**

	2003	2004	2005
Spills to water	141	126	170
City referrals	68	61	89
Water quality referrals	50	41	52
Drug labs	139	195	114
Spill calls except drug labs	181	205	318

## **7. Identification of Known Water Quality Improvements or Degradation**

Charitable groups that sponsored car washes utilized the City's Clean Bay Car Wash Program. The use of the car wash kits prevented a lot of dirty, soapy water from entering our stormwater system. The City has several kits available to the community at no charge. Kits were loaned out 20 times in 2005 to various groups (a 66% increase over use in 2004.) Community groups were also educated through this program about the importance of proper waste management and about how to help keep our water clean. Please refer to Appendix F for a press release related to this topic. Progress was made on four of the eight mitigation projects associated with the Foss Waterway cleanup. In the fall of 2005, 4,585 plants were planted by both the contractor and the City sponsored Washington Conservation Corps crew. The plants and soils were protected by goose exclusion devices and erosion control jute mat. Planting activities will continue into 2006. Please refer to Appendix F for additional information about this and other NRDA habitat restoration projects.

Staff continues to work with WSDOT on several improvements to SR-16. Construction started in 2005 and will continue through 2006. Within the Leach Creek drainage area, future habitat conservation and wetland mitigation is part of the mitigation package conditioned within the wetland permit requirements. Within the Flett Creek drainage basin, WSDOT is presently determining the mitigation that will be provided to address construction and shading impacts to Snake Lake. Snake Lake is located within the Tacoma Nature Center, a major park and environmental education center, and is part of the Flett Creek drainage area.

Construction of the new HOV lanes on I-5 between South 48<sup>th</sup> Street and SR-507 began in 2005. Chemical treatment of construction runoff is being used to control sediment.

An oil sheen in the Thea Foss Waterway was traced up Outfall 237B to the source: A spill from a truck's saddle tank following a trucking accident at the off-ramp from I-5 northbound to SR-705. Ecology oversaw the cleanup and issued a penalty to the trucking firm.

Two houses in residential neighborhoods and a business located on Puyallup Avenue were found to have their sewers connected to the stormwater system. These illicit

connections were eliminated and the systems were connected to the sanitary sewer. City staff also worked with the City of Fircrest to identify and resolve an illicit discharge of sewage, from a duplex located in Fircrest, to the storm sewer system discharging to Leach Creek. This cross connection had existed since the duplex was built in approximately 1980.

The following list of water quality treatment devices for treating right-of-way runoff were permitted for construction during 2005:

- Wet vault at S. Adams between S. 67th and S. 69th Street.
- Bioswale at Alaska Street and S 92nd Street.
- Wetvault at East "G" Street and E 72nd Street.
- Bioswale and Wet vault at East 32<sup>nd</sup> Street Bridge.
- Bioswale at 40<sup>th</sup> Avenue NE between Browns Point Boulevard and 33<sup>rd</sup> St NE.
- Hydrodynamic Separator and Oil Water Separator at East R Street and East 37th Street.

A "doggie daycare" had ongoing problems with animal waste being discharged to the street and then into the storm system; this problem was resolved. Please refer to Page 26 for more information about this business.

An agreement was reached with a company that had received a notice of violation. The case went before Tacoma's Hearing Examiner. As part of the agreement, the company agreed to improvements to their following operations: repair of all roll-off storage bins, maintenance of a sump pump, improvements to a berm, produce and distribute a training guide for employees and to follow a compliance schedule.

After the construction of the Washington Department of Natural Resources Middle Waterway tideflat cleanup project (adjacent to the City's Middle Waterway restoration site), stormwater runoff from 11th Street was crossing the site, creating erosion and discharging sediment into the waterway. The City addressed this issue by installing a curb at the border of the project which now prohibits the movement of water onto the site.

#### **Stormwater Quality in Thea Foss Waterway Basin.**

Two decades of stormwater and stormwater sediment monitoring has shown success in the City's source control program for Thea Foss Waterway. Stormwater loads based on 2001-2005 stormwater monitoring data indicate a 40-80 percent reduction compared to monitoring data collected in the late 1980s through the 1990s. More recently, baseflow and stormwater quality have improved or remained the same for the past four years under the City's NPDES monitoring program. The City has directed numerous source control efforts in this basin. The cumulative effect of these efforts has likely caused the observed improvement in stormwater quality.

The improvements in stormwater quality indicate that source control efforts in Thea Foss Basin were effective in the reduction of chemical concentrations in stormwater. Source control activities currently being implemented by the City include business inspections, response to spills and illicit discharges, street cleaning and catch basin cleaning operations, pollutant source tracing, and implementation of the City's Manual through our stormwater ordinance. The ordinance requires stormwater control systems on new and redeveloped sites and provides a mechanism for enforcement of stormwater concerns.

Reduction of contaminant loads to the Thea Foss Waterway is expected through the City's implementation of stormwater source controls, as well as through the control of other sources, many of which are outside the City's jurisdiction and must be coordinated by other federal, state, and local authorities. Reductions of air and marina pollution are expected through Ecology's Air Program and the Marina Source Control Program developed for Thea Foss Waterway. Reductions in air pollution will decrease not only the direct loads from atmospheric fallout to the surface of the waterway, but will also decrease the pollutant loads washed off upland surfaces and entrained in stormwater runoff. The marina improvements implemented by Foss Waterway Marina, Foss Landing Marina, Johnny's Marina, and Delin Docks (formerly known as City Marina, including installation of facility improvements, will undoubtedly translate into reduced source loads for marinas. Upland and in-water remedial actions implemented by Ecology and the Utilities in 2003 and 2004 were directed at controlling tar seeps in the head of the waterway; the effectiveness of these actions will be verified through long-term monitoring.

Specific chemicals of concern for the Thea Foss Basin are mercury, PAHs, phthalates, pesticides/PCBs and TPH.

**Mercury.** Total mercury was detected in stormwater at the highest frequencies (28 and 26 percent, respectively) at Outfalls 230 and 235. The highest concentrations of mercury were detected in stormwater sediments in Basins 237A, 243 and 230. The highest concentration of mercury detected in 2005 was FD-2A sediment trap in Outfall 237A Basin. Overall, the highest concentration of mercury detected remains FD-23 sediment trap, Outfall 243 Basin in 2004.

**PAHs.** Baseflow concentrations are consistently lower than storm flow concentrations. In addition to lower mean concentrations, baseflow samples are typically characterized by reduced maximum values and less frequent detection. Sporadically high concentrations of LPAHs have been reported in Outfall 237A base flow. This outfall includes some of the highest measured base flow concentrations of naphthalene, phenanthrene, and LPAHs. The median and average concentrations of a few LPAHs and all HPAHs have been reported in Outfall 254 baseflow. This outfall includes some of the highest measured base flow concentrations of anthracene, phenanthrene, and HPAHs.

Comparatively higher median and/or maximum concentrations of PAHs in stormwater were generally observed in Outfalls 230, 235, 237A, and 254. Pyrene concentrations at Outfall 254 were found to be significantly greater than three other outfall's concentrations. In the outfall sediment trap sediments, the highest concentrations of PAHs were found at FD2, Outfall 237A. After FD2, Outfall 237A, the next highest PAH concentrations in the outfall sediment traps were found at Outfall 230 and the 2005 sample, FD6, Outfall 235. Outfall 254 does not have a sediment trap because of tidal influences.

**Phthalates.** In whole-water over the four years, the highest concentrations of BEHP were found in Outfalls 230 and 235. Concentrations in stormwater at Outfall 235 were significantly greater than four outfalls in the basin. In fact, BEHP concentrations appear to be increasing in Outfall 235, a statistically significant trend. However, continued monitoring is needed to replicate this "trend" as statistically significant. This will be done concurrent with source tracing up in the basin in attempt to identify the source of any elevated concentrations. The highest concentrations of BEHP in sediment traps were found in Outfalls 230, 243 and 245.

**Pesticides and PCBs.** In whole water analysis, pesticides and PCBs are generally not detected at the reporting limits and thus were not analyzed. The highest concentrations of DDT and PCBs were found in stormwater sediments in Basin 230. Data from 2005 was not available for Outfall 243 to determine if PCBs are still present at this location.

**TPH.** In the sediment trap sediments, the highest concentrations of heavy oil and diesel were found at MH390 in Basin 245 (2001-2004 only), FD-3A in Basin 230 (heavy oil only) and FD-23 in Basin 243 (diesel only). The possible sources of heavy oil and diesel in Basins 245 and 243 could be truck traffic, the old oil line, USTs (Basins 245 and 243), and/or old gas lines. TPH concentrations in Basin 245 were the lowest concentrations of all the 2005 locations. Possibly, this is the direct result of the closing of a major trucking business in the basin and the continuing Ecology-led source control activities.

With continued monitoring and evaluation of source controls, the City believes further improvements in stormwater quality will be realized. Source controls implemented in 2003-2005 include the following:

- Removal of the coal tar seepage from DA1-line in Outfall 237A.
- Remediation of the source(s) of the “oil-snakes” to storm drain line to Outfall 245 and replacing the storm drain with a sealed line thus removing the “oil-snakes” conduit.
- Support for Ecology in their efforts to locate and remediate unknown UST in Basin 245.
- With construction on SR-16 and I-5, stormwater runoff is now and will be treated before discharged into the storm drains. Construction is to be completed in 2008.
- Monitoring and control of a PAH source in 237B including cleaning the storm line.
- Source tracing in Basin 230, FD3A line and then TVing and cleaning the storm line. Identification of a capital improvement project for storm line replacement in this area.
- Location and repair of collapsed storm and sanitary lines in Basin 235.
- GIS mapped SR 509 and railroad yard storm drain lines.

The City recommends the following source control activities for 2006 and beyond:

**Priority 1 tasks are:**

- Continue Outfall 254 PAHs source tracing.
- Continue Outfall 230 mercury and PCBs/DDT source tracing in Branch FD-3A and FD18 (PAHs and BEHP are also monitored).
- Continue Outfall 245 monitoring for “oil snakes” downstream of the new stormwater line on South 19th Street.
- Outfall 245 East “D” Street and E. 19th investigation by Ecology.
- Hiring one source control specialist in 2006.
- Outfalls 245 and 248 BEHP investigation with Ecology.
- Outfall 235 BEHP and PAHs source tracing using upline sediment traps (2006).

**Other Priority 1 tasks include:**

- Review of the 2005-2006 stormwater sediment data in summer 2006 to confirm existing conditions in the basin.
- Implementing the City’s Surface Water Management Manual.
- Inspect 200-300 businesses per year in Tacoma and document the inspections using the business inspections database



- Respond and track all complaints/spills in complaints database.
- Continue NPDES Stormwater Monitoring Year 5.
- Continue phthalate source investigations.
- Participation in the WSDOT/UW Stormwater Technology Study.
- Participation in Ecology's TRC for Stormwater Treatment Technologies.
- Participation in Ecology's Industrial Stormwater General Permit External Advisory Committee.

**Priority 2 tasks are:**

- Outfall 237A mercury and PAHs in the area draining to FD13 and FD13A.
- Outfall 237A PAHs in the area draining to FD10.
- Outfall 237A mercury, phthalates and PCBs in the area draining to FD10C.
- Outfall 230 BEHP investigation in the area draining to FD3B (including PAHs).

**Priority 3 tasks are:**

- Outfall 237A mercury and PCBs in the area draining to FD2A.
- Outfall 237B PCBs source tracing in area draining to FD35 and FD34.
- Outfall 243 mercury and phthalate source tracing investigations if needed.
- Outfall 235 continue support of Ecology lead investigations.

Priority 1 tasks will be initiated in spring 2006, followed by Priority 2 and then Priority 3. Completion of each task is dependent on what is found during the investigations and staff availability.

**8. Status of Watershed-wide Coordination and Activities which the Permittee has Undertaken Individually or Jointly as Part of the Special Condition S7B7.**

Please refer to Section S7B7 for information on watershed-wide coordination and activities.